DOCUMENT RESUME

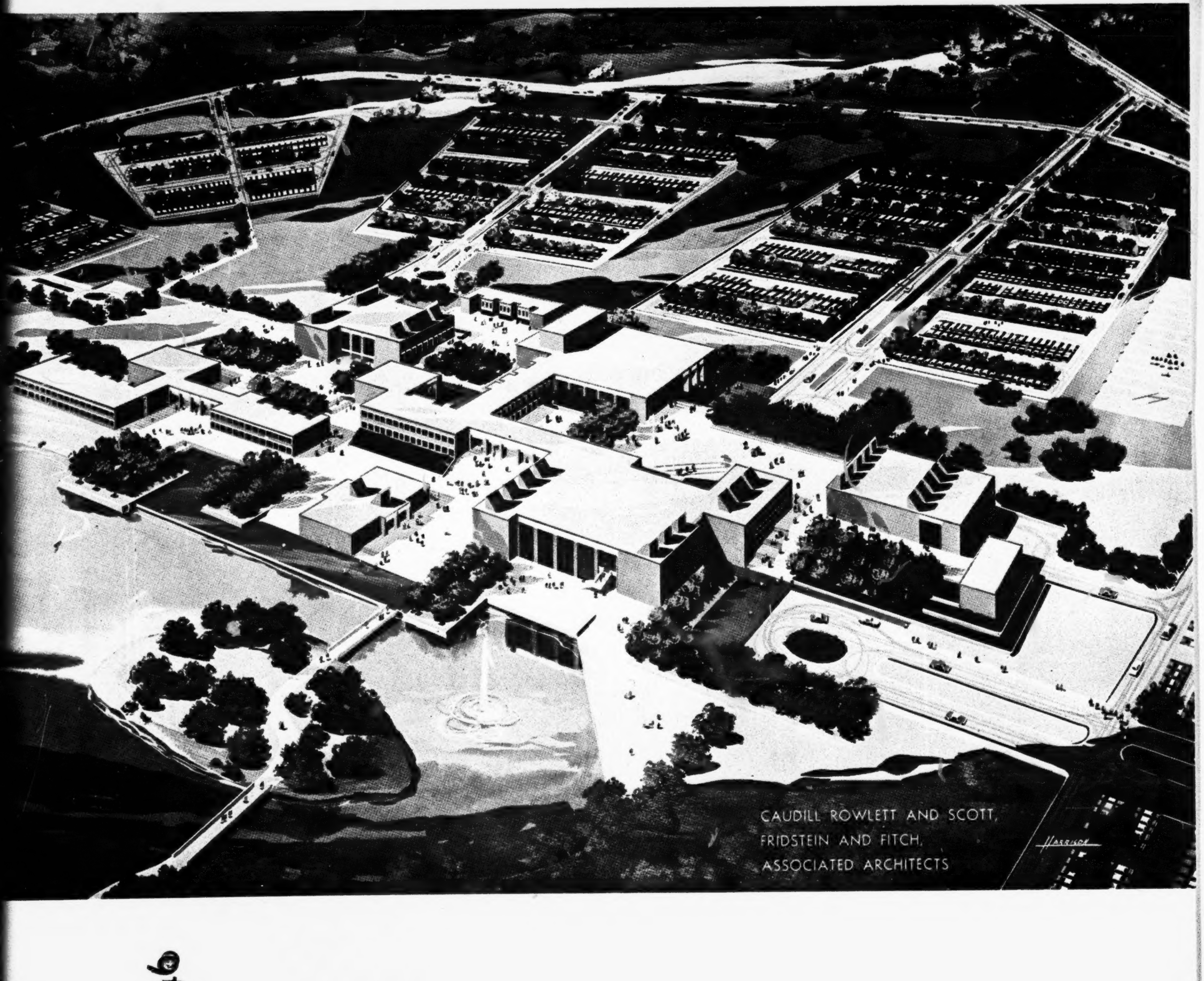
ED 022 346 EF 001 859

DIGEST OF DEVELOPMENT GUIDELINES FOR WILLIAM RAINEY HARPER COLLEGE.

Little (Arthur D.), Inc., Boston, Mass.
Pub Date Dec 66
Note-67p.
EDRS Price MF-$0.50 HC-$2.76
Descriptors-ADULT EDUCATION, EDUCATIONAL PROGRAMS, EDUCATIONAL SPECIFICATIONS, *ENROLLMENT PROJECTIONS, *FACILITY GUIDELINES, *FEASIBILITY STUDIES, *HIGHER EDUCATION, *JUNIOR COLLEGES, SPACE CLASSIFICATION, VOCATIONAL EDUCATION
Identifiers-Cook County, Illinois

The research and planning program for the feasibility studies on the William Rainey Harper College, Cook County, Illinois. The Board of Trustees engaged the firm of Arthur D. Little, Inc., to analyze the Harper College District's economy and population, predict the enrollment levels for each year through 1980, prepare guidelines for the educational program and related activities, and determine the amount and type of space the college needs in order to conduct its activities efficiently. Data and tables compiled from data sourcebooks, records and surveys conducted by Arthur D. Little Inc. are listed in the report. (HH)

Digest of Development Guidelines for William Rainey Harper College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Digest of
DEVELOPMENT GUIDELINES
for
WILLIAM RAINEY HARPER COLLEGE

December 1966

C-67933

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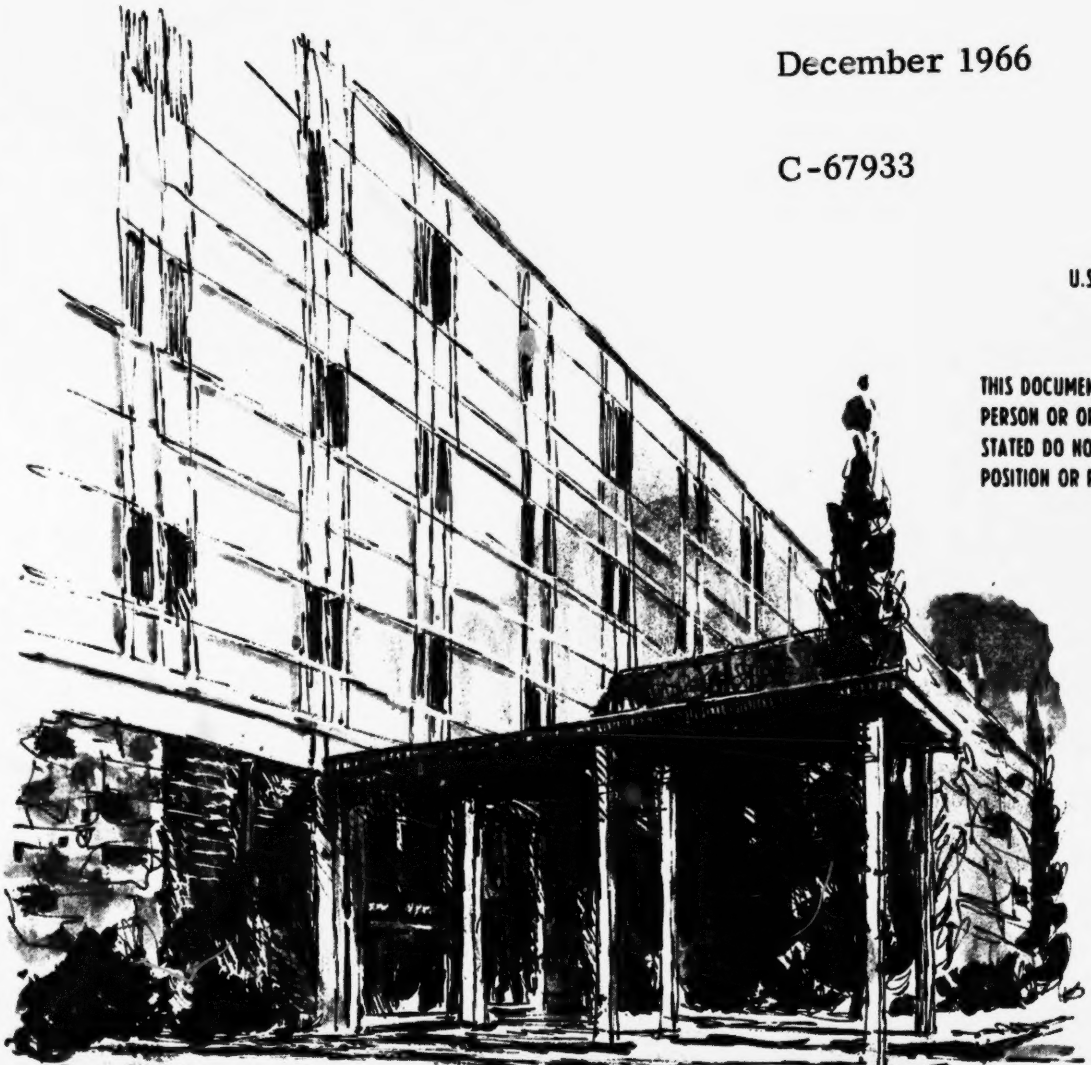

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I. INTRODUCTION

The Board of Trustees of William Rainey Harper College early this year asked Arthur D. Little, Inc., to undertake a research and planning program for the development of the new institution. This program involved analyzing the Harper College District's economy and population, predicting enrollment levels for each year through 1980, preparing guidelines for the educational program and related activities, and determining the amount and type of space the College will need in order to conduct its activities efficiently. This report digests the major findings of, and outlines the program guidelines resulting from our study. A detailed description of the research and planning program is given in the full report, "Development Guidelines for William Rainey Harper College."

THE GOALS OF WILLIAM RAINEY HARPER COLLEGE

Harper College will serve the fastest-growing area in Cook County. The growth in its District--largely the result of crowding in central Chicago, increased incomes and mobility of the population, transportation capability, industrial decentralization, and the availability of vacant land in the District--has created the need for the College. The College will make low-cost, student-oriented education available, within commuting distance, to all who have completed high school. While providing this service to the populace, it will remain attuned to the labor requirements of industry within the District, tailoring its curricula to provide suitable training programs.

William Rainey Harper College has been established as a Class I junior college under the Illinois Master Plan for Higher Education of 1964, as implemented by the State General Assembly with the Public Junior College Act of July 1965. The Harper College District (Figure 1) comprises the four suburban Cook County townships of Palatine, Schaumberg, Wheeling, and Elk Grove.

The spirit in which Harper College has been established is reflected in its choice of name. William Rainey Harper, first president of the University of Chicago, is generally credited with having first used the term "junior college" when, in 1896, he reorganized the University into two major divisions. It has been said that no president has done so much for the University; during his tenure the university extension service was founded, the four-quarter system instituted, and the university press brought into being. Harper's tremendous intellect, energy (he continued, while president, to chair his department and to teach full time) and foresight helped to raise the prestige of scholarship and teaching as professions to their present high levels. His innovations changed the character of higher education in America.

William Rainey Harper College proposes to carry on in Harper's innovative tradition. The District it will serve requires a college that is finely attuned to its needs -- one that will provide opportunities for its growing population and that will train leaders and workers for its expanding economy. To those ends, the Board of Trustees of Harper College have adopted the following statement expressing their general philosophy:

> To provide an outstanding program of higher education for the community it serves is both the promise and the guiding philosophy of William Rainey Harper College. Created by a community responsive to the contemporary insistence on more education for more of its citizens, the College is determined to meet the particular educational and vocational requirements of each student and thus serve the community at large.
>
> For a true community college answers to the demands of the total community. In our community, what are these demands?
>
> In addition to the specific need for two years of high-quality, transferable collegiate credit, the College must recognize the more general but no less important requirement of educating all of its students for a meaningful role in a free and fluid society which promises increased leisure time. Basic to responsible participation in society is the student's realization of his contribution in voting more intelligently, producing more efficiently through the acquisition of a salable skill, and adapting more readily to a complex society. In view of the twin sober realities of the complexity of a dynamic society and the knowledge explosion, the student today must not only learn what is known but also how to acquire knowledge not yet extant.
>
> With a commitment to the dignity and significance of each student, the College will endeavor to bring the student to a realization of what place he can make for himself in modern society and to provide the necessary training for his social and personal goals. To this end, the College must create an environment conducive to the development of sound standards of thinking and conduct and must provide those cultural experiences which open to the student the heritage of the educated man.

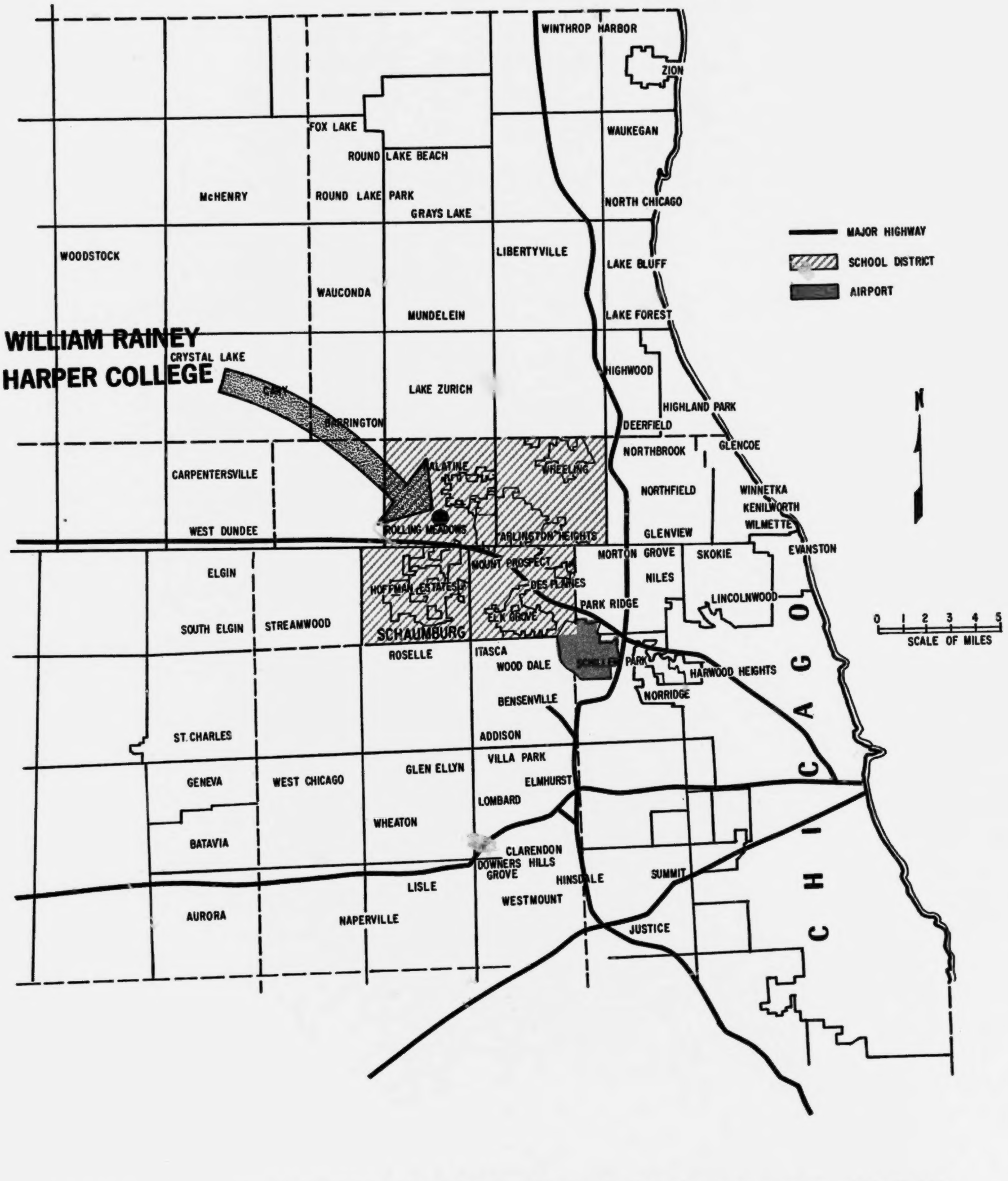
WINTHROP HARBOR
ZION
FOX LAKE
WAUKEGAN
ROUND LAKE BEACH
McHENRY
ROUND LAKE PARK
NORTH CHICAGO
GRAYS LAKE
MAJOR HIGHWAY
WOODSTOCK
LIBERTYVILLE
SCHOOL DISTRICT
LAKE BLUFF
WAUCONDA
AIRPORT
MUNDELEIN
LAKE FOREST
WILLIAM RAINEY
HARPER COLLEGE
CRYSTAL LAKE
HIGHWOOD
CARY
LAKE ZURICH
N
HIGHLAND PARK
BARRINGTON
DEERFIELD
GLENCOE
NORTHBROOK
PALATINE
WHEELING
CARPENTERSVILLE
NORTHFIELD
WINNETKA
KENILWORTH
WILMETTE
ROLLING MEADOWS
ARLINGTON HEIGHTS
WEST DUNDEE
GLENVIEW
EVANSTON
MORTON GROVE
SKOKIE
MOUNT PROSPECT
ELGIN
NILES
HOFFMAN ESTATES
DES PLAINES
LINCOLNWOOD
PARK RIDGE
SOUTH ELGIN
STREAMWOOD
ELK GROVE
0 1 2 3 4 5
SCALE OF MILES
SCHAUMBURG
ROSELLE
ITASCA
WOOD DALE
SCHILLER PARK
HARWOOD HEIGHTS
NORRIDGE
BENSENVILLE
CHICAGO
ST. CHARLES
ADDISON
VILLA PARK
GENEVA
WEST CHICAGO
GLEN ELLYN
ELMHURST
LOMBARD
BATAVIA
WHEATON
CLARENDON HILLS
DOWNERS GROVE
HINSDALE
SUMMIT
LISLE
WESTMOUNT
AURORA
NAPERVILLE
JUSTICE

FIGURE 1 METROPOLITAN LOCATION OF HARPER COLLEGE DISTRICT

Within this philosophical framework, Harper College has adopted the following specific objectives:

1. To offer the first two years of transfer or preprofessional education of the highest quality to each student and to prepare him within his chosen field of study with a sound background commensurate with the first two years of education at a four-year college or university.

2. To provide technical-vocational training programs, with certification, to enhance the student's employment opportunities; to provide retraining courses to facilitate the student's adjustment to and reemployment in a labor market of changing technological demands.

3. To provide appropriate general education for all citizens, assisting them in preparing for a more effective participation in a free society as well as for personal and cultural enrichment in an era which promises more and more leisure time.

4. To offer opportunities for adults in the community to initiate or to continue a collegiate education.

5. To complement the educational programs through an effective counseling service which provides guidance and assistance to each individual student.

6. To encourage the use of its facilities and services for educational and cultural purposes to all citizens of the community.

The establishment of Harper College, together with its philosophy and objectives, reveals its founders' awareness of a need in modern society, one that has given rise to the junior college movement. The junior colleges' twin orientations of service to their students and service to the communities they serve are the emerging pattern in American education.

THE EMERGENCE OF THE JUNIOR COLLEGE IN AMERICA

The junior colleges compose the fastest-growing portion of American education today, both in terms of the numbers of them being established and of their enrollments. Their phenomenal growth seems to be the result of demand stemming from growing population, technological advance in the society, and limitations in the traditional college system.

Since the founding of the first public junior college in Joliet, Illinois, in 1901, the number of junior colleges has grown to around 700. Edmund J. Gleazer, Jr., Executive Director of the American Association of Junior Colleges, has estimated that some 500 new ones will be established within the next decade. Growth is so rapid that statistics on enrollment are badly out of date as soon as they are published; current enrollment estimates range from 800,000 to 1,250,000, but the U.S. Office of Education estimates of 1974 junior college enrollments are only slightly higher than the latter figure. But no matter which statistics are cited, the fact of rapidly growing demand for the services a junior college can provide is clear.

Enrollment in public junior colleges, which are growing at higher rates than private institutions, will almost double during the decade. More significantly, however, the non-first-time enrollment in public junior colleges is expected to grow to over one and a half times the number of students enrolling for the first time by 1974. Also, part-time enrollment is expected to increase faster than full-time enrollment. These expectations suggest not only that junior colleges are likely to achieve greater holding power, but also that the number of persons who will be seeking opportunities for continuing education and other special programs will increase.

Part of the demand for these services is the natural result of population growth. The "baby boom" of the late 1940's has become the "young adult boom" of today. Probably more significant, however, is the continued technological advancement in business and industry. More and more people recognize that a high school education is no longer sufficient; occupational security and advancement are ever more dependent on education and training beyond high school.

The kinds of services typically offered by the junior colleges are indicated by the "Specific Objectives" of Harper College just quoted. The first objective, to provide the equivalent of the first two years of college education, will become increasingly important. Demands on universities are such that they are becoming ever more oriented toward specialization and postgraduate research, with the result that undergraduate education receives relatively less emphasis. Also, university admission policies are becoming more selective. The junior colleges will enable students who for some reason (finances, test scores, immaturity) were unable to enter a university as freshmen to do so as fully prepared juniors. In California, for example, the hierarchical advancement of students from junior colleges to the universities relieves the pressures on the universities to cope with freshmen and sophomores, whose attrition rates are normally high. The hierarchical advancement of students from high school to university by way of the junior college is inherently more efficient than the "weeding out" process that normally takes place in the university. More states will move toward coordination of their facilities for higher education, as Illinois is currently doing, and the importance of this role of the junior colleges will become still more significant.

An increasingly important service provided by junior colleges, one not usually duplicated in four-year colleges, is technical training. For example, the National Science Foundation has estimated that 64,000 technicians per year will need to be trained to meet 1970 demands; the current rate is 30,000 per year. The complementary pressures of labor market demand for skilled people, and lack of opportunity for the unskilled, will create further demand for this junior college function.

A third important service provided by junior colleges is adult education for people who are not necessarily pursuing career goals. As society becomes more complex, more people seek further education strictly for personal development and the satisfaction they derive from feeling that they are staying in touch with a rapidly changing world.

The junior colleges provide these services through an orientation distinctly different from that of other educational institutions. They are devoted to the dissemination more than to the advancement of knowledge. Their admissions policy is open-door, opening the possibility of higher education to all. They place great emphasis on counseling and guidance in order to best meet the needs of individual students.

They are also particularly attuned to the needs of the localities they serve. They provide low-cost higher education within commuting distance of their students' homes (one of the major problems of the junior colleges has been parking facilities), thus enabling those who cannot afford to, or do not want to, leave home to attend college the chance for higher education. The junior colleges also keep in touch with the needs of industry in their areas for special kinds of employees, and through tailoring their curricula and matching student abilities to employment opportunities through their counseling and guidance programs, they provide a needed service for local industry as well as for their students.

II. THE NEED FOR WILLIAM RAINEY HARPER COLLEGE

The need for Harper College has evolved since 1950. It is based on the rapid growth of the population and economy within the College District. That growth is in turn the result of rising incomes, increased mobility via the automobile, and congestion and obsolescence in the core city of Chicago. The District's location on one of the radial transportation corridors out of Chicago, its proximity to the locations of newer employment centers, and its abundance of vacant land are among the dominant reasons for its growth.

GROWTH IN THE HARPER COLLEGE DISTRICT

The main transportation influences on the College District have been radial. The Chicago and Northwestern Railroad extends radially through the center of the District from Des Plaines to Barrington, and the older, more densely settled portions of the College District such as Mount Prospect, Arlington Heights and Palatine straddle the radial rail line. The railroad was probably influential in establishing these communities, especially Arlington Heights, as small rural service centers.

However, a much more important influence on the District communities than railroads has been exerted by roads and highways. Important radial arterial roads that have had an influence in this sector are: Rand Road, Northwest Highway and Higgins Road. These roads are, for the most part, four or more lanes wide and access to them is unrestricted. The Northwest Tollway is the only limited access highway that traverses the District. Closer to Chicago, and outside the College District, this expressway connects via Route 194 and Route 94 (the John F. Kennedy Expressway) to provide major access to the City of Chicago.

Since 1950 most of the significant industrial development within the District has taken place near or adjacent to these roads. This industrial development is largely oriented to highway travel and is only secondarily influenced by the railroad. Before World War II, industrial decentralization did not really affect the District. Melrose Park, to the northwest of the City of Chicago but closer in than the District, gained about 1,000 workers.

But the real impact of industrial growth occurred in the postwar period. Much industrial development occurred in northwest communities near the District, but closer to the City of Chicago in communities such as Melrose Park, Schiller Park, Addison, and the old commercial center of Des Plaines. Early in the postwar period ten firms were established in Wheeling and in Elk

TABLE 1

INDUSTRIAL COMPOSITION OF HARPER COLLEGE DISTRICT

SIC*	Major Industry Group	Number of Firms	Firms With Listed Employment	Percent Distribution	Listed Employment	Percent Distribution
20	Food	19	18	4.7	1,261	4.0
22	Textiles	3	2	0.5	80	0.3
23	Apparel	5	5	1.3	90	0.3
24	Lumber and Wood	7	7	1.8	104	0.3
25	Furniture	11	9	2.3	727	2.3
26	Paper	14	12	3.1	1,126	3.6
27	Printing	30	28	7.3	1,065	3.4
28	Chemicals	22	19	4.9	768	2.5
29	Petroleum	5	5	1.3	2,321	7.4
30	Rubber and Plastics	18	16	4.1	611	1.9
31	Leather	1	1	0.3	8	-
32	Stone, Clay, and Glass	8	8	2.1	473	1.5
33	Primary Metals	22	21	5.4	2,154	6.9
34	Fabricated Metals	44	43	11.1	2,080	6.6
35	Machinery, Non-Electric	55	52	13.5	3,344	10.7
36	Electrical Machinery	29	27	7.0	3,312	10.6
37	Transportation Equipment	6	6	1.6	195	0.6
38	Instruments	21	19	4.9	2,473	7.9
39	Miscellaneous	10	10	2.6	922	2.9
	Manufacturing Total	330	308	79.8	23,114	73.7
	Contract Construction	20	15	3.9	354	1.1
	Transportation, Communications, Utilities	13	7	1.8	5,937	18.9
	Wholesale, Retail Trade	124	40	10.3	1,395	4.5
	Finance, Insurance, Real Estate	11	-	-	-	-
	Services	46	15	3.9	545	1.7
	Unclassified	8	1	0.3	14	0.1
	Total	552	386	100.0	31,359	100.0

*Standard Industrial Classification

Source: Compiled from Harper College Occupation and Training Survey conducted by Arthur D. Little, Inc.

Grove. The Centex Industrial Park, one of the largest such parks in the nation, was established in Elk Grove, largely independent of the main rail lines, and has been responsible for a significant increase in employment within the District.

The development of O'Hare International Airport has affected the growth of economic activity within the District in several ways. First, the airport itself is an important employment center. Many of the people who work there probably live in the District. Second, the airport has attracted a large amount of commercial and service activities on its periphery that primarily service customers that use and visit the airport. Some of this activity has spilled over into the District. Third, the airport has attracted industry into the surrounding area. Some of these industries are directly related to the functions of the airport; but more important, many businesses and industries, particularly branches and subsidiaries of national firms, are attracted by level of development which the airport represents--the availability of utilities, services, communications networks, and convenient access to suppliers or customers throughout the country.

Other factors related to transportation are partly responsible for the recent rapid growth within the College District. Until 1950, large portions of the Northwest Section and particularly the District had not been as extensively developed as other suburban sectors in suburban Cook County. The Northwest Sector, including the District, has traditionally been an interstitial area of suburban Cook County. However, circumferential railroads and expressways have had little influence on the outer portions of the Northwest sector in which the District is located. As a result, while areas closer to the center of the metropolitan area and other directional sectors in suburban Cook County were rapidly being developed, the outer portions had large amounts of cheap, vacant and agricultural land available for development. Combined with improved radial expressway access to the center of Chicago and the proximity of O'Hare Airport, the availability of cheap, vacant land has been a major factor spurring both economic and residential growth in the District.

The individual character of a college grows out of the socio-economic conditions of the community, and the college must respond to community needs if it is to be successful and fulfill its role in the broader educational system. For these reasons, it is important to understand the dynamics of the economy and the population so that the junior college can take advantage of and respond to the opportunities and needs it represents.

Whether population growth or economic growth--they do not necessarily go hand-in-hand--will have the more significant influence on the District's future. The two are apparently becoming more interdependent, and we suspect that eventually, industrial forces will have the most far-reaching influence in changing the character of the District, though population growth has dominated up to now.

EMPLOYMENT GROWTH

Employment opportunity within the District is one of the factors to be considered in determining Harper College's curriculum and space needs. Because the College can contribute to the District's industrial well-being by providing industry-oriented programs, it is necessary to understand employment trends in the District. To aid our understanding of employment trends and needs since 1960 we compiled a list of 552 District firms. This test, which served as the data base for the Occupation and Training Survey discussed in Chapter IV, gives a breakdown of employment by type of industry.

Until only recently, the growth of employment in the District has consistently lagged behind population growth; this is the usual pattern in many suburban areas of large metropolitan regions. However, population growth itself ultimately becomes an attraction for economic expansion. In similar areas where more complete information is available, employment in activities directly related to local population and industry ranges from 600 to 900 persons per 10,000 population. For the College District, this means that employment in trade and services now may range from 14,000 to 20,000.

Growth of industrial employment, while not directly related to the local population, is likely to become more dependent upon the local population as a primary labor market. Manufacturers located in the District who were interviewed during the course of this study indicate, for example, that they have a difficult time recruiting labor from within the District. The availability of skilled and semi-skilled labor within the District as well as the availability of jobs will become an increasingly important factor for population growth.

By 1964, employment within the College District was almost six times as large as it was in 1955. Considering that the District's population almost quadrupled from 1950 to 1960, it would appear that its employment is growing at a more rapid rate than its population. However, different time periods and absolute numbers may present misleading comparisons. We estimate that the College District has been adding approximately 12,000 people a year to its population in the 15-year period from 1950 to 1965. Between 1955 and 1964, we estimate that, on the average, about 2,000 jobs per year were added to the District's economy. However, the population base of approximately

32,000 in 1950 was considerably larger than the employment base about 4,000 in 1955. Although employment has been growing relatively faster than population in recent years, population substantially exceeds the number of jobs in the District.

Thus, on balance, the District is an exporter of labor. In fact, however, it is also a significant importer of labor; a number of employers reported that they hire very little local labor because the appropriate skills are not locally available.

Between 1955 and 1964, employment in metropolitan Chicago area grew by 160,000. Over 10% of this growth, amounting to about 19,000 jobs, took place in the College District. During this period, the northwest suburbs accounted for almost 40% of metropolitan employment growth. Furthermore, about 30% of the northwest suburban employment growth occurred within the College District. In the last nine years, employment has decentralized and migrated to suburban areas. The northwest suburbs and the College District have been major beneficiarie of the decentralization.

The College District is now feeling the major impact of employment growth that occurred in most Chicago areas before 1960. Its employment growth was greater after 1960 than in the preceding five years, in contrast to trends in the metropolitan area, Cook County, and the northwest suburbs. Before 1960, much of the employment growth in the northwest suburban area occurred outside the College District. However, after 1960 the College District accounted for a major share of employment growth. For example, from 1955 to 1960, the College District accounted for only about 14% of the employment growth in the northwestern area, while in the four-year period after 1960 it accounted for almost half.

As employment in the District has grown, employment needs have changed with industrial composition. Primary (agricultural and extractive) industry in the District has been declining as land has been put to more profitable use in secondary (manufacturing) and tertiary (non-manufacturing) activities. Manufacturing is almost entirely oriented to a sectional market in Northeastern Illinois or to larger markets extending to the whole nation. Local employment in manufacturing is primarily dependent on conditions of demand outside the College District. In contrast, local employment in tertiary activities is dependent on conditions of demand generated within the District. Growth of population within the District has been the main impetus to tertiary activity, but growth of manufacturing has, to some extent, also been responsible.

The major impact of employment growth within the College District has been in the tertiary sectors of the economy that are oriented to serving population and business. Data for 1961, showing the distribution of manufacturing and non-manufacturing employment for most of the major communities in the College District, indicates that in 1961 the proportion of jobs in the non-manufacturing or tertiary activities was greater than the proportion in manufacturing. This was true for all municipalities in the College District for which 1961 data were available. District municipalities had a lower proportion of employment in manufacturing than other North Cook County municipalities except Evanston.

Trends in the number and distribution of manufacturing and non-manufacturing jobs are available for only three of the College District communities--Mount Prospect, Arlington Heights and to Palatine. From 1957-1964, the proportion of non-manufacturing jobs increased in all three communities. A considerable increase in the importance of non-manufacturing employment occurred in Arlington Heights and Palatine. Although increases occurred in both manufacturing and non-manufacturing employment, relative increases for non-manufacturing employment were consistently higher in all three communities. In the seven-year period, for the three communities as a whole, manufacturing employment only increased about one and a half times, while non-manufacturing employment more than tripled.

Manufacturing in the College District is largely devoted to the production of durable or hard goods. More specifically, College District nondurable employment is concentrated in the metalworking industries (fabricated metals and non-electrical machinery) and in the manufacture of electrical machinery. These industries, by and large, produce intermediate products for the use of other industries rather than final products for sale to consumers. The same processes used in the fabricated metals and non-electrical machinery industries are also used in the manufacture of electrical machinery, transportation equipment, and ordnance. Because these industries are related, they often provide a market for each other's goods.

As shown in Table 2 the most important manufacturing industries in the College District in 1963 were (in order of importance) fabricated metals, electrical machinery, non-electrical machinery, instruments, paper, and printing. The District had a greater concentration of employment in these industries than the Chicago metropolitan area. Except for instruments and paper, the same concentration and specialization of manufacturing industries existed in the District in 1955, but the relative importance of these industries has shifted over time.

The College District and Chicago metropolitan area have a similar industrial composition, in that both areas have large concentrations of employment (over 10%) in fabricated metals, electrical machinery and non-electrical machinery. However, the College District has been growing at a faster rate in these industries and, as a result, is more specialized in these fields than is the metropolitan area as a whole. In addition, employment in the District's instruments industry has increased considerably while that of the metropolitan area has decreased; this industry has become an important local employer.

The labor needs of the College District's largest and fastest growing manufacturing industries are quite diverse. Their need for managerial, clerical, sales, and unskilled personnel is about comparable to manufacturing industries as a whole. On the other hand, professional and technical workers are in great demand in the electrical and non-electrical machinery industries. Craftsmen and other skilled workers are required in large numbers by the metalworking industries to make fabricated metals and non-electrical machinery. The requirement for semiskilled operators is high, particularly in the electrical machinery industry.

POPULATION GROWTH

The size of the student body at William Rainey Harper College, its needs for physical facilities and development of its curriculum will depend largely on the future growth and characteristics of the College District population.

The population of the College District quadrupled between 1950 and 1960, growing from 32,000 to 129,000; by 1970, we estimate, the population will more than double, growing to about 325,000, and by 1980 will exceed 500,000 (Table 3). The District's rate of growth is greater than that of suburban Cook County as a whole.

The age distribution in the College District has important implications for future development of the College. A high proportion of persons under 15 years of age indicates a potential sustained demand for enrollment. In 1960 over 40% of the District's population was in this category. Large enrollment increases in the public schools suggest that this proportion has not appreciably diminished.

The two largest groups within the District according to age are children 5-14 years old, who make up nearly a quarter of the District's population, and adults 25-44, who compose a third of the population. Less than a fifth of the population is over 45 years old.

TABLE 2

DISTRIBUTION AND CHANGE IN MAJOR INDUSTRY EMPLOYMENT IN THE COLLEGE DISTRICT AND THE CHICAGO METROPOLITAN AREA

	College District/Chicago Metropolitan Area							
			Percent of Total Employment				Percentage Growth (Decline),	
Major Industry Group	Ranking, 1963		1955		1963		1955 to 1963	
Fabricated Metals	**1**	3	**11.6**	10.9	**20.5**	11.3	**480.3**	--
Electrical Machinery	**2**	1	**46.1**	15.6	**17.8**	16.5	**27.0**	1.9
Non-Electrical Machinery	**3**	2	**15.1**	12.2	**16.5**	13.1	**260.3**	3.6
Instruments	**4**	12	--	2.8	**10.8**	2.8	--	(5.1)
Paper	**5**	10	**0.9**	2.9	**6.2**	3.4	**2188.8**	14.1
Printing	**6**	5	**3.8**	9.1	**5.8**	9.6	**397.4**	1.0
Food	**7**	4	**1.1**	11.8	**4.1**	10.1	**117.2**	(17.2)
Primary Metals	**8**	6	**1.7**	8.0	**3.8**	7.3	**630.7**	(12.7)
Furniture	**9**	13	**11.0**	2.7	**3.8**	2.7	**11.9**	(5.0)
Miscellaneous	**10**	11	--	3.1	**3.3**	3.4	--	(3.9)
Rubber and Plastics	**11**	14	**4.5**	2.0	**2.7**	2.5	**97.8**	16.2
Stone, Clay, and Glass	**12**	15	**1.2**	1.9	**1.4**	2.3	**311.4**	17.3
Transportation Equipment	**13**	8	--	4.7	**0.9**	3.4	--	(29.1)
Chemicals	**14**	7	--	3.8	**0.9**	4.7	--	17.9
Apparel	**15**	9	--	4.2	**0.7**	3.4	--	(22.3)
Lumber	**16**	17	**3.1**	0.9	**0.5**	0.8	**-43.6**	(21.2)
Textiles	**17**	18	--	0.9	**0.3**	0.7	--	(24.6)
Leather	--	16	--	1.2	--	1.1	--	(10.4)
Petroleum	--	19	--	0.8	--	0.7	--	(16.8)
Ordnance	--	20	--	0.1	--	0.1	--	--
Tobacco	--	21	--	0.1	--	0.04	--	(31.6)

TABLE 3

RATES OF CHANGE AND ESTIMATED FUTURE POPULATION IN THE HARPER COLLEGE DISTRICT

Period	Average Annual Rate of Change	Year	Estimated Population
1960-1965	10.9%	1965	216,000
1965-1970	8.5	1970	324,800
1970-1975	6.0	1975	434,600
1975-1980	3.6	1980	518,800

Sixty percent of the District's residents are employed in white-collar occupations; substantial numbers of them have annual incomes of $10,000 or more (Table 4). Reflected in the relatively high socio-economic standing of the District as a whole is the fact that a majority of adults over 25 years of age have had some education beyond high school.

These indicators, taken together, reflect future demand for higher education within the District. Large numbers of children will come of college age within the next ten to fifteen years; many of them are the offspring of parents who value education highly because their own occupational status and incomes depend on education, and who will thus encourage their children to seek higher education. An increasing number will be the offspring of parents who did not have an opportunity to obtain a higher education and who will seek to advance their children's education beyond their own achievement level.

TABLE 4

EDUCATION, INCOME AND EMPLOYMENT CHARACTERISTICS: RESIDENTS OF HARPER COLLEGE DISTRICT

Municipality	Median School Years Completed---Persons 25 Years and Over		Median Family Income		% of Families with Incomes Over $10,000		% of Employed Persons in White Collar Occupations		Composite Socio-Economic Rank*
	Years	Rank	Dollars	Rank	%	Rank	%	Rank	
Elk Grove	12.7	3	$ 8,243	6	22.9	10	66.9	4	6
Hoffman Estates	12.7	3	8,274	6	25.3	8	63.4	4	5
Mount Prospect	12.7	3	10,398	3	52.8	3	73.2	2	3
Arlington Heights	12.7	3	9,789	3	47.8	3	69.8	3	3
Rolling Meadows	12.4	4	7,589	10	14.2	14	52.1	6	8
Palatine	12.4	4	8,837	4	36.5	4	59.7	5	4
Wheeling	12.2	6	7,390	11	15.6	14	41.6	10	10

*Municipalities have been ranked from 1 to 15. The composite socio-economic rank has been derived by giving equal weight to each of the four characteristics shown in the table.

Source: Suburban Factbook, March 1964; Northeastern Illinois Metropolitan Area Planning Commission. Compiled from 1960 U.S. Census of Population.

III. STUDENT BODY SIZE

William Rainer Harper College will become, we believe, one of the more significant new institutions responding to the need for increasing opportunities for higher education. Size alone will be one determinant. By 1974, we estimate that full-time equivalent enrollment in Harper College will be approximately 5000 students. This will be well above the average enrollment (1200-1500) in junior colleges at that time. By the academic year 1979-1980, we estimate that the enrollment in Harper College will expand even further--reaching approximately 9000 full-time equivalent students.

ENROLLMENT PROJECTIONS

Future enrollment at Harper Junior College has been estimated on the basis of a careful evaluation and analysis of District and regional population characteristics, high school enrollment, patterns of college attendance, the area's growth potential and the experience of other junior colleges newly established in similar districts. These estimates are summarized in Table 5.

FIRST-YEAR ENROLLMENT DEMAND

The number of secondary school graduates (see Table 6) forms the base for estimating first-year enrollment demand and subsequent elements of the total enrollment projection. The most critical factor in the model is the percentage of secondary school graduates in the District who might conceivably seek additional education in the Junior College.

To provide background information for making this estimate, we attempted to collect information from relatively new junior colleges to determine the proportion of high school graduates in their districts who were attracted to the institution during the first years of operation. Very little detailed data is collected in this regard, however. After institutions have been in operation for several years, on the other hand, general guidelines are more often available. Typically, it is assumed that an established junior college will attract from 20% to 33% of secondary school graduates as first-time enrollers, though the variations are often extreme.

Patterns of post high school activity of recent high school graduates from schools in the Harper College District are shown in Table 7. In 1964 the percentage of high school graduates who enrolled in institutions offering programs typically provided by the two-year community junior college accounted for 14%

TABLE 5

SUMMARY OF ENROLLMENT PROJECTIONS FOR HARPER COLLEGE
1968-1980

College Year Ending	Full-Time Students	Part-Time Students	Total Head Count Enrollment	FTE Enrollment	FTE Day Enrollment
1968	670	940	1,610	1,070	980
1969	1,220	1,950	3,170	2,050	1,860
1970	1,550	2,790	4,340	2,740	2,470
1971	1,720	3,450	5,170	3,190	2,860
1972	1,990	4,370	6,350	3,840	3,430
1973	2,270	5,000	7,270	4,400	3,920
1974	2,620	5,760	8,380	5,070	4,520
1975	2,850	6,260	9,110	5,510	4,910
1976	3,270	7,510	10,780	6,460	5,750
1977	3,570	8,220	11,790	7,070	6,290
1978	3,960	9,110	13,070	7,830	6,960
1979	4,450	10,240	14,690	8,800	6,830
1980	4,650	10,690	15,340	9,200	8,180

Note: Projections have been rounded to the nearest multiple of 10.

Source: Prepared by Arthur D. Little, Inc.

TABLE 6

ESTIMATED NUMBER OF FUTURE SECONDARY SCHOOL GRADUATES IN THE COLLEGE DISTRICT

	1967-1968	1968-1969	1969-1970	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977	1977-1978	1978-1979	1979-1980
Total Population (June 1965 Estimate: 216,000)	279,700	302,100	324,800	347,500	370,100	392,300	413,900	434,600	454,200	470,600	486,600	502,700	518,800
Population in Households	277,700	299,400	321,600	343,700	365,700	387,200	408,100	428,100	446,900	462,600	477,800	493,100	508,400
Population per Household	3.77	3.76	3.75	3.73	3.70	3.68	3.65	3.63	3.60	3.57	3.55	3.53	3.50
Number of Households	73,660	79,630	85,760	92,140	98,840	105,220	111,810	117,930	124,140	129,580	134,590	139,690	145,260
Public School Students per Household	.86	.86	.85	.85	.84	.84	.83	.83	.82	.82	.81	.81	.80
Total Public School Students	63,350	68,480	72,895	78,320	83,025	88,385	92,800	97,880	101,795	106,255	109,020	113,150	116,210
Percent in Grade 12	5.2	5.3	5.3	5.4	5.4	5.6	5.6	5.6	5.7	5.8	5.8	5.9	6.0
Percent of All Students in Grade 12	88.3	88.5	88.7	88.9	89.0	89.1	89.3	89.5	89.7	89.9	90.0	90.0	90.0
Total Public and Private School Students in Grade 12	3,730	4,101	4,355	4,757	5,037	5,456	5,820	6,124	6,468	6,855	7,026	7,418	7,748

Source: Computed by Arthur D. Little, Inc.

TABLE 7

PATTERNS OF DISTRICT HIGH SCHOOL GRADUATES' POST-HIGH-SCHOOL ACTIVITY

Post High School Activity Choices of Harper College District High School Graduates	Percentage Distribution of High School Graduates	
	1964	1965
4-Year College or University	60.4	59.0
2-Year College	4.4	3.5
Vocational/Technical School	5.1	4.4*
Business School	2.8	1.9*
Nursing School	1.7	1.6
U.S. Armed Forces	4.0	1.7*
Employed or Undecided	19.1	15.1*
Unaccounted for	2.5	12.8
Total	100.0%	100.0%

*Data for High School District 211 was not available for these categories; consequently, the percentages shown are understatements of the actual distribution of activity choices of high school graduates.

Source: Compiled from records supplied by High School Districts 211 and 214.

of all graduates. This is particularly significant in view of the national rate of 14.1%. Although as noted, the data for 1965 are incomplete, it is significant that 11.4% of high school graduates enrolled in such institutions. The percentage enrolled in four-year colleges or universities--60%--is relatively high. Nationally, only 39% of high school graduates enroll in a four-year college or university.

As the District population increases, the percentage of high school graduates enrolling in four-year colleges or universities will probably decline from the current level. It is reasonable to assume that a proportion of the percentage of students currently enrolling in four-year colleges or universities will be attracted to the new Junior College. Partly, this will result just from the increased numbers of students in high school. More important, perhaps, is the fact that college and university entrance requirements are becoming more stringent in the face of increasing numbers of secondary school graduates seeking a higher education. The Illinois state universities now draw only about 7.5% of their entering freshmen from students in the lower half of their graduating classes; their admissions policies may become even more selective in the future. Guidance and counseling programs in high schools will tend to encourage students to broaden their educational background by enrolling in programs most appropriate to their abilities, interests, and circumstances. Considering the broad array of programs offered at the junior college level, this is the type of institution to which students are being increasingly directed.

Discussions with high school principals, counseling, and guidance personnel in the College District who are knowlegable about the interests and abilities of students in the area indicate that 20% of the district high school graduates enrolling in the junior college would be a reasonable assumption for the new institution's early years of operation. This is consonant with experience elsewhere and is supportable on the basis of current activity patterns of high school graduates.

A factor which may mitigate the pulling power of the Junior College during its formative years, however, is the relatively high socio-economic level of communities in the District. Five of the communities rank in the upper third of Chicago suburban municipalities measured on a composite socio-economic status scale. College attendance by students in the District is high, and considering the educational levels of persons residing in the District, they are similarly oriented toward college and university education. In addition, parental pressure on children to obtain a baccalaureate degree is an important factor in a student's choice of educational institutions, and there is no evidence to suggest that this pressure is less in one occupational category than in another. However, the question of costs suggests the possibility that proportionally more students from the lower-income families than from the middle- and upper-income families will choose the junior college.

For these reasons we estimate that Harper Junior College will attract somewhat less than 20% of the District's high school graduates during the first and possibly second years of operation. For projection purposes, we have used 17% as the initial factor. As the College develops, however, influences on the student's choice of educational program are likely to change.

COMPLETE ENROLLMENT ESTIMATES

The likely freshman enrollment demand for the junior college, considered in the light of the established relationships between the first-year class and each of the other elements of enrollment at existing junior colleges, make complete enrollment estimates possible. To determine the number of full-time students who will need accommodation in the second year, we have examined enrollment patterns in existing Illinois junior colleges and institutions in other parts of the country. In the State of Illinois the number of second-year students in most junior colleges ranges from 33% to 67% of the number of first-year students. For private colleges, the average is approximately 57% as opposed to the average for public junior colleges, which is about 37%. Because of the socio-economic characteristics of the Harper College District, retention patterns are likely to be more nearly like the private college averages than the public colleges. For projection purposes, we have assumed that second-year students as a percent of first-year students will approximate the Illinois median during first years of Harper College's operation and will climb to a minimum of 45% in the early 1970's and to a minimum of 60% thereafter. As noted earlier, the retention of students in junior colleges nationally is expected to increase steadily over the coming years. In addition, as the community college concept becomes more widely implemented and as competition for placement in four-year educational institutions increases, average retention rates should likewise grow beyond current levels.

An additional component of the full-time student group can be classified as special students. These include persons who may have been out of high school for several years or more, as well as new graduates who enroll full-time in programs especially designed for their needs. For beginning institutions, experience elsewhere indicates that special students may account for 5% of the full-time enrollment. As the school develops and its programs become more extensive, this percentage should increase. By 1972, we expect it will be at least 10%, and rise to 12% by 1980.

In nearly all community junior colleges, the number of part-time students exceeds the number of full-time students. It is most frequently assumed that the number of part-time students will be twice the full-time enrollment. To refine this assumption, we examined enrollment data for the Illinois junior colleges and found that in 1964, on a state-wide basis, part-time enrollment was approximately 1.6 times the full-time enrollment. In the Chicago area, this figure was 2.23. The ratio is lower for private 2-year colleges than for public colleges. We believe that the suburban characteristics of the Harper College district suggest an initial part-time to full-time student ratio slightly lower than the state average. As the District becomes more densely populated and as the school broadens its educational program, the ratio is likely to increase to levels experienced in the Chicago area. Thus, in 1967 we assume that the ratio of part-time to full-time students will be 1.4. By 1980, this ratio should approximate 2.3.

To determine the amount of space required to accommodate the enrollment demand, it is necessary to convert head count enrollment estimates to an equivalent factor of full-time students. Space needs cannot be projected on the basis of head count enrollment alone because students are not uniform units in terms of space usage. The actual amount of time spent in class which constitutes a demand for space will vary among students and the numerous elected programs. The most widely used figure for calculating full-time equivalent (FTE) students is 15-class-hours weekly.

Enrollment levels for determining space requirements are derived from the number of FTE students in the day program. As a check on the projection method, it is interesting to note the relationship between the FTE students in the day program to the total number of FTE students. The average ratio resulting from the projections for Harper College is 0.89. The average ratio experienced by 25 California junior colleges in 1963 was 0.87. Considering the fact that many of these colleges are operating well-developed evening programs and are within commuting distance of large populations, the near coincidence of the two average ratios is significant.

The results of our projection procedures are shown in Table 8. For the academic year 1967-1968, it is estimated that the total demand for Harper College will be approximately 670 students. The demand by part-time students is estimated to be 935, for a total "head count" enrollment of approximately 1600 students and an FTE enrollment of 1065. The 1980 head count enrollment is estimated at approximately 15,000 students; the FTE, at 9200.

ADULT EDUCATION ENROLLMENT

The enrollment projections discussed above do not include estimates of enrollment in adult education programs. Because of the great variety of programs typically offered and because of the variations in the duration and scope of adult education programs, enrollment estimates cannot be made with any degree of accuracy. In states whose community junior colleges institutions have been developing rapidly, new educational facilities, while intended for use for

TABLE 8

PROJECTED NUMBER OF FULL-TIME EQUIVALENT STUDENTS - WILLIAM RAINEY HARPER JUNIOR COLLEGE, 1967-1980

	1967-1968	1968-1969	1969-1970	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977	1977-1978	1978-1979	1979-1980
Percent of Grade 12 Graduates Likely to Seek Enrollment In Harper College	17%	20%	23%	23%	25%	25%	27%	27%	29%	29%	31%	33%	33%
Freshman Year Demand	634	820	1,002	1,094	1,259	1,364	1,571	1,653	1,876	1,988	2,178	2,448	2,557
Sophomore Students as Percent of Freshmen	-	40%	42%	45%	45%	50%	50%	55%	55%	60%	60%	60%	60%
Sophomore Year Demand	-	328	421	492	566	682	786	909	1,032	1,193	1,307	1,469	1,534
Special Full-Time Students as Percent of Total Full-Time Students	5%	6%	7%	8%	8%	10%	10%	10%	11%	11%	12%	12%	12%
TOTAL FULL-TIME STUDENTS	668	1,220	1,550	1,724	1,985	2,273	2,619	2,847	3,267	3,574	3,960	4,451	4,649
Ratio of Part-Time to Full-Time Students	1.4	1.6	1.8	2.0	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3
TOTAL PART-TIME STUDENTS	935	1,952	2,790	3,448	4,367	5,000	5.762	6,263	7,514	8,220	9,108	10,237	10,693
Part-Time Students in the Day Program (66%)	617	1,288	1,841	2,276	2,882	3,300	3,803	4,134	4,959	5,425	6,011	6,756	7,057
Full-Time Equivalent of Part-Time Day Students (50%)	308	644	921	1,140	1,440	1,650	1,902	2,067	2,480	2,713	3,001	3,3783	3,529
TOTAL FULL-TIME EQUIVALENT STUDENTS IN THE DAY PROGRAM	976	1,864	2,471	2,864	3,425	3,923	4,521	4,914	5,747	6,287	6,961	7,829	8,178
Part-Time Students in Evening Program (34%)	318	664	949	1,172	1,485	1,700	1,959	2,129	2,555	2,795	3,097	3,481	3,636
Full-Time Equivalent of Part-Time Evening Students (28%)	89	186	266	329	416	476	549	596	715	783	867	975	1,018
TOTAL FULL-TIME EQUIVALENT STUDENTS	1,065	2,050	2,737	3,193	3,841	4,399	5,070	5,510	6,462	7,070	7,828	8,804	9,196

Source: Computed by Arthur D. Little, Inc.

use for adult education purposes, are not planned on the basis of accommodating anticipated enrollments in this field. In the State of Florida, for example, facilities are explicitly programmed to house the full-time equivalent day students, and adult education programs are accommodated on the basis of available facilities. The State of Illinois is following this example.

To develop general guidelines, however, we examined national patterns of adult education activity where the information was available. A circular published by the U.S. Office of Education in 1959 showed that adults participating in some type of adult education program in 1957 represented approximately 12% of the total population 20 years of age and older. This included participation in such programs as civic and public affairs, general education, trade, business and technical activities and agricultural courses. The largest proportion of participants were in the age group of 20 to 44 years.

In 1964, adult education programs conducted in the College District enrolled approximately 3500 persons. Considering the young average age of the District population and our estimates of population growth since 1960, we estimate that the 1964 adult education enrollment was approximately 5% of all persons in the 20 to 44 year-old age group. This is somewhat below the national participation rate even after adjustment for an estimate of program participation levels in the District.

On this basis, we estimate that participation in adult education programs by 1970 could reach 5,300. This would be approximately the same level of participation currently experienced in the District. However, by 1975 participation rates should increase as more facilities are available and as the adult education program becomes fully developed. At participation rates of 6% to 7%, this could amount to an enrollment ranging from 8800 to 11,000 persons. We stress the generality of these estimates. It is possible that interest in adult education programs could result in enrollments exceeding these levels if facilities are available. In this regard, it is likely that facilities of a variety of institutions will become increasingly used for adult education purposes, as programs become more specialized and the range of interests in casual education experiences is broadened as a result of a growing and more heterogeneous population.

IV. EDUCATIONAL PROGRAMS AT HARPER COLLEGE

The educational philosophy of the open door poses a real challenge for a newly organized two-year institution to develop a truly comprehensive program. Democratization of education is the cornerstone of this policy, and as such, a broad array of educational programs must be provided to meet the needs of the students with different abilities and from different educational and socio-economic backgrounds. Yet the interests of all students cannot be accommodated, and educational programs must be carefully devised so that the broadest range of interests and abilities are served, consonant with sound educational policy.

In this chapter we are concerned with the basic form of the junior college and its curriculum development characteristics, the attitudes and outlook of the economic community toward Harper College, and its potential educational program and elements of the community service programs.

PROGRAM SPECTRUM

Harper College, like other community junior colleges, will have four basic elements in its educational program spectrum:

1. Transfer programs in the liberal arts and sciences for students intending to continue their education at a four-year college or university;
2. General education as a core program for all students, and/or as a terminal program for students not seeking to further their education beyond the junior college;
3. Occupational education in preparation for immediate employment upon graduation in a technical, semiprofessional or other vocational pursuit; and
4. Adult education, continuing education, and special programs specifically designed to pursue a sequence of courses or to serve the purpose of casual interest.

As principal functions intertwined with the educational programs, the junior college provides:

1. Extensive guidance and counselling services; and
2. A full range of community services--from the provision of personnel to assist community organizations to the opening of facilities for frequent community use.

The diversity of junior college educational programs and the potential impact of its functions require careful planning and administration if the institution is to retain its identity and provide a cohesive community influence. The educational and ancillary programs must thus respond to a variety of individual needs. The complexity of the situation and the variety of "response" postures the junior college must assume are shown in Figure 2, which traces the heterogeneity of student backgrounds and matriculation patterns through the system.

Depending on state and local policies concerning qualification, students enrolling in a junior college will range in age from 16 to 65. The heterogeneity of student backgrounds, and the students' overlapping and sometimes conflicting interests and abilities, require careful placement testing as well as extensive guidance and counselling to ensure that the student is directed to a program suited to his particular needs.

Although the open-door policy ensures students of admission, provided they meet minimum requirements established by law, it does not assure them a free selection in pursuing a particular educational program. Placement tests conducted and evaluated by professionals in student personnel services are essential in helping students make educational plans consonant with their interests and abilities.

The placement process is imperfect, however. Once a student enrolls in a particular program, his performance should be continually reviewed and the student made aware of the alternatives before him. Reportedly, it is seldom easy for a student to know of or understand precisely what alternatives are available if he loses interest or fails in his original program. And too often, lines of intracollege transfer are more rigid than those found in the articulation between two-year and four-year institutions--a problem we will return to subsequently.

At the end of the first year, the most drastic change in a student's status is likely to occur. During, and at the completion of the first year for example, a student should have an opportunity to reassess his educational program and change direction if necessary. A student making this self-appraisal requires professional assistance--particularly, if reassessment involves a change from a prestige program to one considered a "step down."

Student choice depends on the availability of a broad spectrum of courses and programs. To determine the kind of basic educational program that would provide such choice, we used the number of full-time equivalent students registered for each course in over 70 existing junior colleges as the data base for examining patterns of course demand. With the aid of computers, these patterns were analyzed to determine the relative importance of course offerings to students in different types of institutions, taking into consideration socio-economic characteristics of its district, population size, and the like. Following this analysis, a basic educational program was established as the framework within which specific guidelines for transfer programs, general education, and occupational education could be developed. The basic educational program is shown in Table 9.

TRANSFER PROGRAMS

The transfer function of junior colleges is perhaps the best-known of their many functions. More programs are offered for transfer purposes than for any other reason, and all too frequently, a junior college will measure its prestige and status on its ability to place graduates in four-year colleges or universities. This is certainly an admirable objective but not one which should be pursued at the expense of other equally important programs.

To determine the basic requirements for transfer to a four-year college or university, we examined general course and credit requirements for the first two years in several different types of institutions of higher education which are representative of colleges to which graduates from Harper College are likely to apply. The transfer requirements of these institutions, which represent a cross-section of both public and private colleges, are a suitable basic guide for formulating these programs at Harper College. All their listed course areas are contained in the basic educational program guide presented in Chapter VIII of the full report.

Of key importance is the need for college officials to decide whether to focus on a curriculum designed to qualify students for entrance into a program leading to a Bachelor of Arts or Science, or into a specialized program such as those offered by Schools of Engineering, Architecture, and Business Administration. We suggest that emphasis be placed on the former in the early years until the college curriculum is fully developed.

GENERAL EDUCATION

In many junior colleges, transfer programs in the liberal arts are interchangeable with general education programs. However, the general education function of junior colleges is one of its most significant, and is more often treated as a separate element of a comprehensive two-year college. Thus, a general education program can be either transfer-oriented or terminal.

Approximate Range of Age Levels Upon Enrolling	Categories for Persons Who Might Enroll In Junior College Programs
16-17	High-School Students Seeking Accelerated Educational Programs
17-19	New High-School Graduates Seeking Further Education
18-21	High-School Drop Outs
20-25	Former Junior College Students Re-enrolling
22-40	Employed Seeking Higher Level Job
25-45	Persons Seeking Retraining Because of Job Obsolescence
28-45	Employees Enrolling in Employer-Sponsored Programs
25-65	Adults Seeking Casual Education

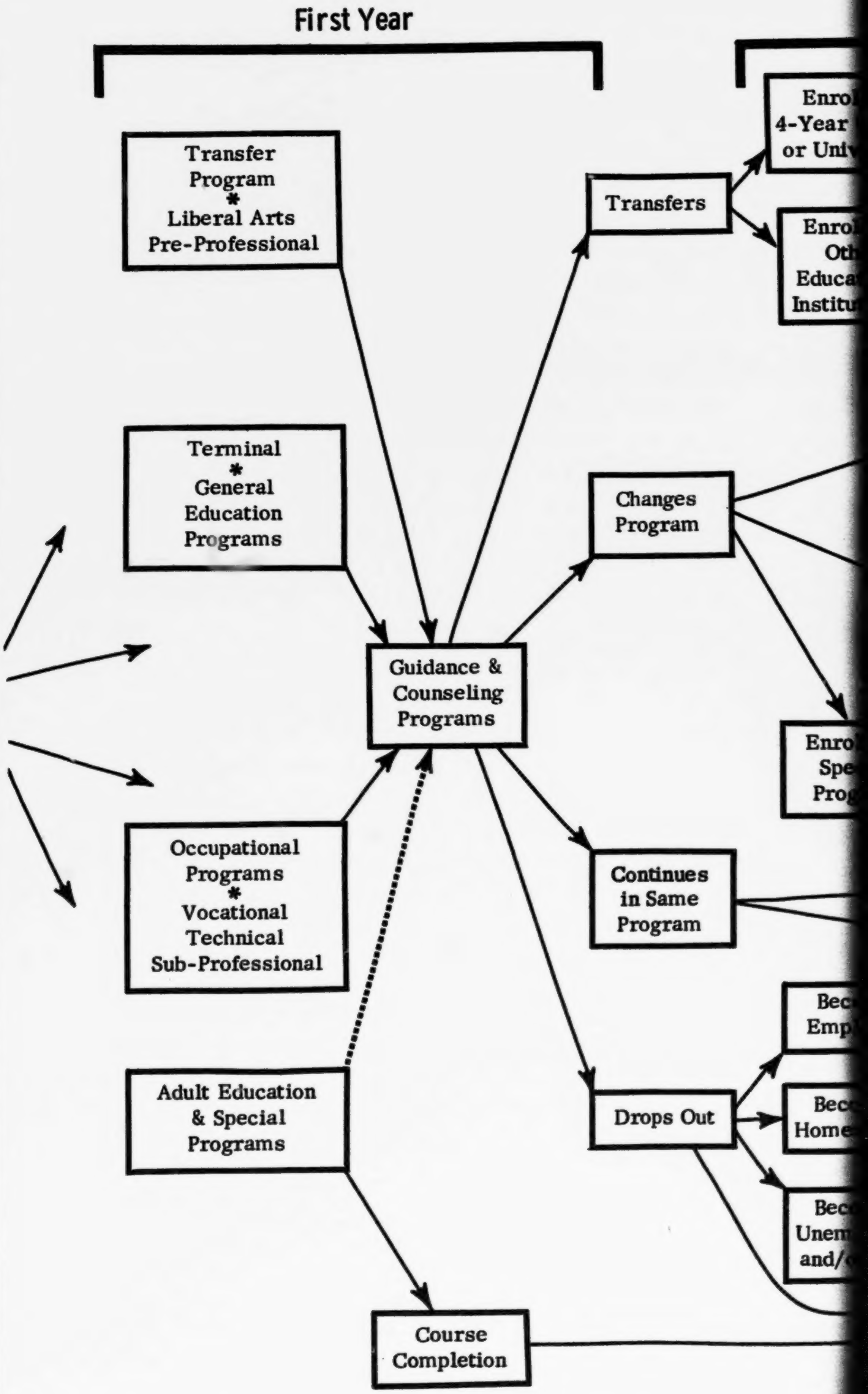
First Year
Transfer Program * Liberal Arts Pre-Professional
Terminal * General Education Programs
Occupational Programs * Vocational Technical Sub-Professional
Adult Education & Special Programs
Guidance & Counseling Programs
Transfers
Changes Program
Continues in Same Program
Drops Out
Course Completion
Enrol 4-Year or Univ
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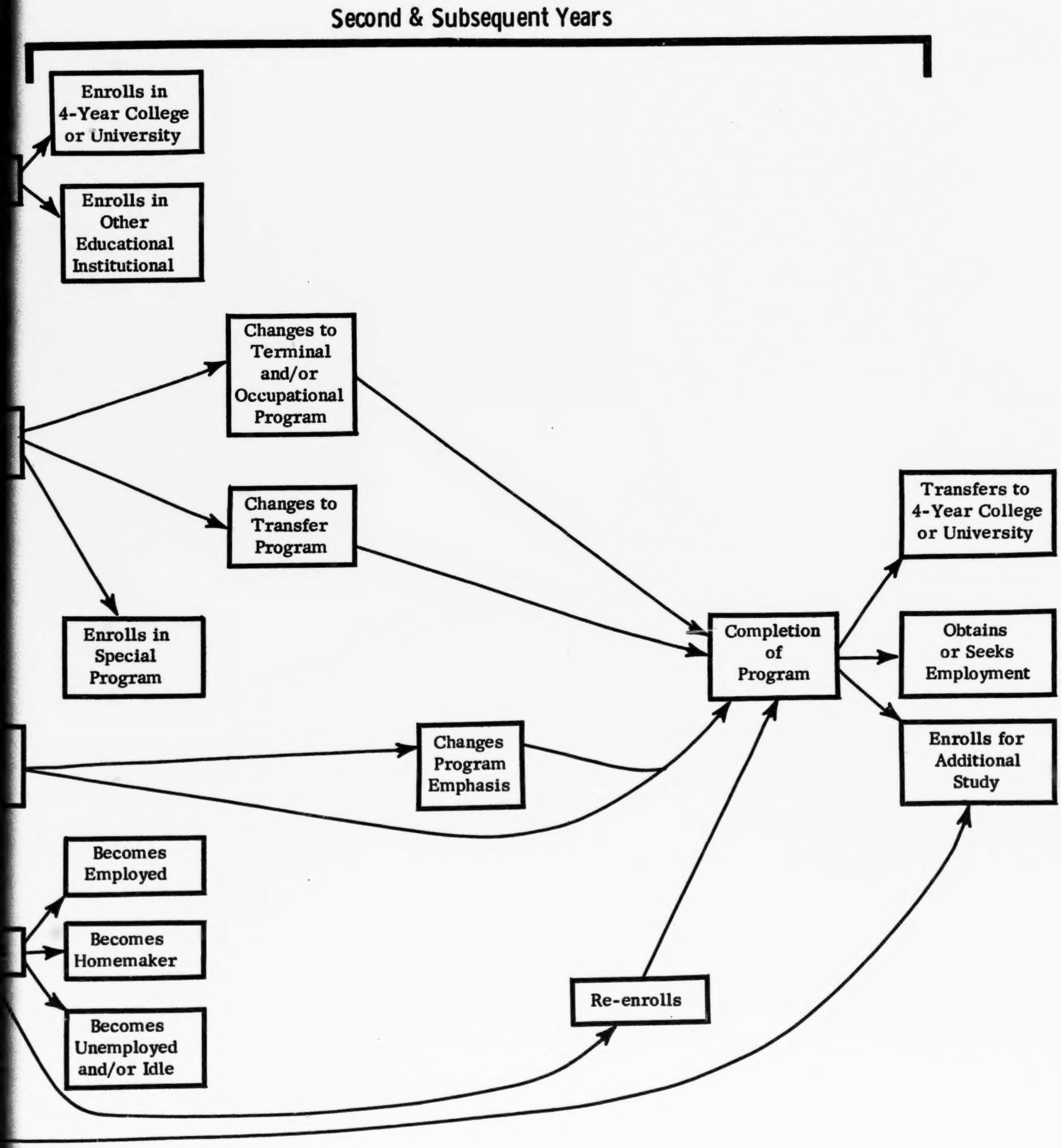
FIGURE 2 HETEROGENEITY OF STUDENT BACKG
IN THE JU



Second & Subsequent Years
Enrolls in 4-Year College or University
Enrolls in Other Educational Institutional
Changes to Terminal and/or Occupational Program
Changes to Transfer Program
Enrolls in Special Program
Completion of Program
Transfers to 4-Year College or University
Obtains or Seeks Employment
Enrolls for Additional Study
Changes Program Emphasis
Becomes Employed
Becomes Homemaker
Becomes Unemployed and/or Idle
Re-enrolls

NT BACKGROUNDS AND MATRICULATION PATTERNS
IN THE JUNIOR COLLEGE

TABLE 9

THE BASIC EDUCATIONAL PROGRAM

Life Sciences

- General
- Biology
- Anatomy and Physiology
- Microscopy
- Zoology
- Botany

Mathematics and Physical Sciences

- General
- Mathematics
- Physics
- Chemistry
- Earth Science
- Astronomy

Social Sciences

- General
- Anthropology
- Economics
- Geography
- History
- Political Science
- Psychology
- Sociology

Humanities

- General
- Art
- Drama
- English
- Foreign Languages
- Music
- Philosophy
- Speech

Graphic Arts

- General
- Commercial Art
- Photography
- Publishing and Printing
- Editorial Writing
- Journalism
- Millinery

Business Education

- General
- Accounting and Bookkeeping
- Finance
- Data Processing
- Management
- Typing
- Shorthand
- Marketing
- Business Machines

Agriculture

- Ornithology and Horticulture
- Landscape Architecture

Health Sciences

- Registered Nursing
- Vocational Nursing
- Dental Technology
- Medical Assistance
- X-ray Technology
- Sanitation
- Hospital Training
- Inhalation Therapy

TABLE 9 (Continued)

Services

- Cosmetology
- Fire Science
- Library Assistance
- Nursing Education
- Political Science
- Recreational Leadership
- Welfare Aid

Other

- Physical Education
- Library Technology
- Education
- Home Economics

Occupational Education

- General
- Aeronautical Technology
- Air Conditioning
- Building Trades
- Ceramic Technology
- Drafting Technology
- Electrical Technology
- Electronic Technology
- General Engineering
- Engineering and Technology
- Industrial Management Supervision
- Industrial Technology
- Machine Operation and Repair
- Auto Maintenance and Repair
- Metallurgical Technology
- Metal Trades
- Textile Technology
- Welding
- Architecture
- Business Equipment Technology

The terminal function is particularly important in view of the fact that many students, for a variety of reasons, seek a post-high-school education without clearly understanding their objectives. The general education program can be helpful in assisting a student to find a meaningful educational path. Coupled with an intensive professional guidance and counselling program, this can be one of the most important functions of the two-year college.

General programs for freshmen and sophomores in four-year colleges vary, of course, with the institution. A student intending to continue in the sciences or mathematics must generally follow a more rigidly defined set of courses than one pursuing further studies in the humanities or social sciences. Typically, course hour requirements for two years range from twelve to forty hours in the humanities, six to twenty- four hours in the social sciences, and twelve to eighteen hours in the physical sciences and mathematics. English composition and literature and physical education are also basic requirements. The University of Illinois' first and second year programs and transfer requirements are probably representative of the field.

However, it is important to note that senior colleges are beginning to relax their transfer requirements, recognizing that duplication of their own programs is neither possible for many institutions, nor even necessarily desirable as an educational objective. On the other hand, a number of students enter college with the avowed purpose of extending their general education. They need a general education program flexible enough to permit them to pursue areas of particular interest, even though these interests may be outside the generally prescribed combination and sequence of courses.

A noted spokesman for the general education function of community junior colleges, B. Lamar Johnson, argues that the program should be structured around goals and objectives concerned with the way a person responds to and participates in life; that general education should not be a set of particular courses, but rather a flexible collection of programs which enable a student to better understand and appreciate the increasingly complex cultural, social and economic environment.

There are no standards or formulas for achieving this type of program, however. Although the approach does establish goals against which a college can evaluate its general education program, there is little agreement on how these goals can be achieved. In his study on the progress and prospects of the junior college, Leland L. Medsker concluded that "junior colleges have made relatively little progress in developing well-organized curricula for general education."

OCCUPATIONAL EDUCATION

Perhaps the curriculum area of greatest challenge for junior colleges is the development of an occupational education program which is fully responsive to the community's socio-economic characteristics, and is at the same time relevant to an ever-changing job market. For the most part, occupational education programs have not met the challenge. In the literature pertaining to junior colleges, occupational education programs (a term used interchangeably with vocational/technical education) receive a substantial amount of attention. This attention, however, is representative of the program's potential; it is out of all proportion to its actual place in the overall comprehensive program.

This point is illustrated by the fact that out of 644 junior colleges reporting course offerings in 1962, only 34% offered secretarial and clerical courses, the most frequently offered terminal education program. The course area ranking second was electrical and electronics engineering, offered by only 14.4% of all junior colleges reporting. In terms of the need--which has been well-documented in numerous studies--for extensive development of high quality, job-oriented educational programs, these statistics are discouraging. However, the course offering incidence in California, where the most rapid growth of community colleges has been experienced in recent years, is noteworthy; occupational education programs are offered by a substantial percentage of its colleges. We believe this is characteristic of the increasing awareness by persons in the junior college field and by the public in general of the importance of occupational education.

One of the reasons for this is the growing concern of educators, economists, sociologists, and others involved with manpower and education problems, with the need for people trained in technical and semiprofessional levels. Thus, the U.S. Department of Labor recently observed that:

> Technological changes have occurred with such rapidity in recent years that the supply of technical manpower has failed to meet the need for it. At present, the number of technicians employed as supporting personnel is approximately three-fourths the number of engineers and scientists. It has been estimated that within a few years, an average of two to three technicians will be needed for each engineer. The Bureau of Labor Statistics estimates that 800,000 additional technicians will be needed by 1970, not including replacement requirements.[1]

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[1] Manpower Research Bulletin No. 1, U.S. Dept. of Labor, 1963.

This need is symptomatic of a serious problem which affects nations with a high level of technology. For example, the authors of a recent study on the strategies of human resource development observed that:

> The practice of hoarding professionals and using them on tasks which could be performed by people with subprofessional training is widespread in most advanced countries ... The low ratio of subprofessionals to professionals in research and development groups is .... the result of failing to train and develop enough technicians.[2]

This conclusion is supported by the recent survey findings of the Delaware Council of Engineering Societies, whose study revealed that engineers employed in Delaware believed that one-third of their professional duties could be handled equally well by technicians. Specifically, it was felt that technicians could readily handle such tasks as troubleshooting, customer problems, training processing operators, and directing product testing and quality control programs.

The education of technicians and semiprofessionals by community junior colleges is not only appropriate but necessary. Economic growth for a particular locality may depend in part on the availability of trained technicians. Firms utilizing highly skilled and professional personnel will recruit scientists and professional engineers on a national basis, but will look to the local region for their supply of technicians.

To determine what kinds of occupational education programs would be most responsive to regional needs, we conducted an occupation and training survey among business and industrial concerns in the Harper College community. This survey was used to help determine the needs for particular kinds of occupational education programs and to find out how industry in the District feels about the Junior College as a training ground for present and potential employees.

The firms that responded to the questionnaire is itself a good indication of community response to Harper College; 21% of the firms took the trouble to complete and return the questionnaire. With questionnaires, normally, anything over a 20% return is considered to be a good sampling. In this case, however, the results are particularly good because the 113 firms responding employ about 60% of all the people employed in all 552 firms. Besides the questionnaire, we conducted 35 on-the-spot interviews with firms in the District; interview results appear to validate the questionnaire results.

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2. Harbison, Frederick and Myers, Charles A., Education, Manpower, and Economic Growth (McGraw-Hill, 1964), p. 169.

REGIONAL NEEDS FOR OCCUPATIONAL EDUCATION

The first step in the analysis of regional needs for occupational education was an examination of employment by occupation among questionnaire respondents. A breakdown of employment is shown in Table 10.

Among the nonsupervisory professionals and technicians, which account for 9% of reported occupational employment, it is significant to note the importance of technicians. In the questionnaire, respondents were asked to list scientists and engineers having a baccalaureate degree or more. The technicians category, therefore, is primarily composed of persons who do not have a professional degree. This group accounts for approximately half of this major category. Within these fields of technology, the highest levels of employment are generally found in the area of mechanical technology, followed by electrical, electronic and chemical technology. In view of this, it is noteworthy that chemical and electronic technicians are somewhat more significant groups for questionnaire respondents. It is not surprising, however, in view of the industrial composition of the District.

Among the management occupations, the most significant grouping reported by respondents include miscellaneous managerial and supervisory jobs, marketing and sales occupations, and financial positions. The fourth most important employment group is production management, which is considerably below the financial management category, but yet substantially higher than any of the remaining occupations.

The balance of employment reported by occupational categories is distributed among sales and clerical workers and skilled and semiskilled workers. Within the first group, which accounts for 30% of the total, employment is spread fairly evenly among the six categories, with clerks and clerk-typists accounting for the largest portion. These are occupational categories for which there is an apparent need by employers in the District. This need is substantiated by both the questionnaire results and our interviews with industrialists. Other occupational categories of significance for development of the educational program of Harper College are sales, office machine and key punch operation, and the like.

In the skilled ans semiskilled categories, which account for 24% of total reported occupational employment, almost 50% of the group is made up of mechanics and repairmen, and assemblers. The latter category is generally classified as semiskilled in that the jobs generally involve a manipulative skill which can be learned in a relatively short time. A large portion of persons employed in this category are female and turnover is often high. However, blueprint reading, assembly techniques, basic mathematics and production engineering can enable an assembler to upgrade his job and improve his earning position.

TABLE 10

EMPLOYMENT BY MAJOR OCCUPATION GROUP*

Occupation	Reported Employment**	Percentage Distribution
Professionals, Nonsupervisory	1,626	8.98
Management Occupations	2,328	12.86
Top Executive Occupations (includes only persons in the capacity of chairman of the board, president, vice presidents, and the general manager of the firm)	175	0.97
Sales Workers (nonmanagerial)	1,835	10.14
Clerical Workers	3,596	19.87
Foremen	328	1.81
Skilled or Semiskilled Workers (excluding foremen)	4,352	24 04
Other	3,862	21.33
Total	18,102	100.00

*Reported by respondents to occupations and training survey.

**Reported employment by occupational categories represented approximately 75% of total reported full time employment.

Mechanics and repairmen require a higher level of skills, and the relatively high employment in this occupation group is important for the occupational program of the college. Although the usual process of becoming a skilled mechanic or repairman is through an apprenticeship program, it is an area where the Junior College can make a significant contribution through its occupational program. There is a large gap between these two categories and the next most significant occupations, general machinists, and inspectors and quality control personnel. This latter category is likely to be a significant growth occupation for firms in the District in view of the rapid growth and importance of the instruments and electrical machinery manufacturing categories.

Compared with labor scarcities reported by respondents, the occupational distribution of firms in the District suggests an important need for programs upgrading semiskilled workers and training persons about to enter the labor force in skills that would facilitate on-the-job training in electrical, electronic and industrial technology.

In addition to occupational education programs addressed primarily to business and industry, there appears to be substantial demand for programs in other occupational areas such as health sciences, and public and personal services. The basic educational program used in calculating the educational specifications includes a number of courses in each of these areas.

Our interview results show that a two-year nursing program, with an associate degree, will be particularly significant. Discussions with hospital and nursing administrators in the area reveal enthusiastic support for the Junior College, in view of the increasing demand for nurses, and considering planned hospital expansions. The Northwest Community Hospital, for example, now has approximately 200 beds, and will expand to an estimated 400-500 beds by 1970. An initial class of 35 students could be accommodated and the hospital's Board of Directors will make clinical facilities available to assist the college in the teaching program. Because such a program would bring qualified instructors to the District, we expect that enrollment in nursing programs would expand substantially.

THE IMPORTANCE OF EDUCATIONAL PROGRAMS TO DISTRICT FIRMS

In the questionnaire we asked respondents to indicate from a number of programs those which would be helpful to present employees and those which would be helpful for training people firms in the District need to hire. The responses to these questions are shown on Tables 11 and 12. They indicate that the respondent firms have a fairly pragmatic view of what is essential in junior college offerings, while at the same time recognizing the importance of business related courses. The more traditional academic offerings, such as the physical,

TABLE 11

EDUCATIONAL PROGRAMS HELPFUL TO PRESENT EMPLOYEES OF QUESTIONNAIRE RESPONDENTS

Name of Program	Rank	Number of Respondents	Percent of All Respondents
Business and Industrial Management	1	54	47.8
Communications Theory and Practice (English, Technical Writing, Speech)	2	49	43.4
Secretarial Sciences	3	41	36.3
Production Control (Foremanship)	4	32	28.3
Metalworking and Machine Operation Personnel Management	5	31	27.4
Electrical and Mechanical Repair and Maintenance	6	28	24.8
Electricity and Electronics Mathematics	7	26	23.0
Drafting (Architectural, Industrial)	8	24	21.2
Data Processing	9	23	20.4
Engineering Theory and Technology	10	22	19.5
Computer Programming	11	21	18.6
Physical Sciences (Physics, Chemistry)	12	18	15.9
Graphic Arts and Industrial Design	13	17	15.0
Social Sciences (Economics, Sociology, Government)	14	7	6.2
Aeronautical Theory and Technology Life Sciences (Biology, Health, Medical Research)	15	3	2.7

Source: Occupation and Training Survey conducted by Arthur D. Little, Inc.

TABLE 12

EDUCATIONAL PROGRAMS HELPFUL FOR TRAINING PEOPLE QUESTIONNAIRE RESPONDENTS NEED TO HIRE

Name of Program	Rank	Number of Respondents	Percent of All Respondents
Business and Industrial Management	1	52	46.0
Secretarial Sciences	2	51	45.1
Communications Theory and Practice (English, Technical Writing, Speech)	3	39	34.5
Electrical and Mechanical Repair and Maintenance	4	38	33.6
Metalworking and Machine Operation	5	29	25.7
Production Control (Foremanship)	6	27	23.9
Drafting (Architectural, Industrial)	7	26	23.0
Electricity and Electronics Mathematics			
Data Processing	8	25	22.1
Personnel Management	9	23	20.4
Computer Programming	10	22	19.5
Graphic Arts and Industrial Design	11	18	15.0
Social Sciences (Economics, Sociology, Government)	12	7	6.2
Aeronautical Theory and Technology	13	4	3.5
Life Sciences (Biology, Health, Medical Research)			

Source: Occupation and Training Survey conducted by Arthur D. Little, Inc.

social and life sciences are regarded as relatively unimportant. Not surprisingly, courses such as metalworking, electrical machinery repair and maintenance, and electronics are favored. The demand for such courses reflects the makeup of industry in the District, which (shown in Table 1) is concentrated in metal fabrication, electrical and nonelectrical machinery, and instruments. The College can serve a real community need by providing programs that serve these industries.

To both questions, respondents ranked business and industrial management, secretarial sciences, and communications theory and practice the highest. In each case, from a third to a half of all respondents noted these program areas as ones of particular need. Other noteworthy courses which were specifically mentioned by respondents include: radio-television communications; retailing and salesmanship; food technology research; human relations; photography; journalism; investment finance; office machine repair and plastics processing.

We found that a majority of firms thought the junior college could substantially aid their organized training programs (Table 13). For example, one firm noted that "junior college training should be sufficient to meet requirements for job entry. Naturally, some training would be necessary for satisfactory performance." Another firm stated that "although substantial training would be required by us, basic and advanced courses would provide greater individual opportunities and contribute greatly to our training." In some cases, however, junior college training is seen to be of little use: "Our operations are unique and involve specially designed equipment. We must train on the job in all but general occupations."

Large numbers of firms also indicated willingness to provide tuition refunds to employees taking courses at the College (Table 13). About a third of them thought that people trained at the College could relieve their professional people of "dogwork"; according to one respondent, "this should satisfy one of the problems that comes from people working below their level of competence, e.g., engineer doing technician work."

IMPLEMENTATION OF THE OCCUPATIONAL EDUCATION PROGRAM

All the evidence points to strong support for development of a viable occupational education program at Harper College; 42% of the respondents indicated that they or their firm would be willing to act in an advisory capacity to the junior college in developing one-year and two-year technical or semiprofessional programs. It is strongly urged that advisory committees on occupational education be established in program areas consonant with the interests of the District's business and industry community, as discussed above.

TABLE 13

INDUSTRY'S RESPONSE TO HARPER COLLEGE

	Respondents Answering Yes		Respondents Answering No		Respondents Who Did Not Answer	
	Number	Percent	Number	Percent	Number	Percent
Does your firm have a tuition refund program that now applies or would apply to junior college courses?	41	36.3	41	36.3	31	27.4
Could the new Junior College usefully supplement organized training programs?	62	54.9	10	8.9	41	36.2
Would you or your firm be willing to act in an advisory capacity to the junior college in developing one-year or two-year technical or semiprofessional programs?	47	41.6	41	36.3	25	
Do you think some of employees having a bachelor's degree or more could be more efficiently utilized with the assistance of people completing specialized junior college training courses? (See Note)	35	31.0	15	13.3	30	26.5

Note: 33 Respondents (29.2%) answering Don't Know to this question.

Source: Harper College Occupation and Training Survey conducted by Arthur D. Little, Inc.

The dynamic nature of highly industrialized societies increasingly necessitates job changes. Adjustments can be more easily made if people have the type of guidance and counseling in their educational programs which enables them to acquire new skills and knowledge rapidly. For this reason, we also suggest that the college organize an on-going committee of businessmen and the industrialists who would be concerned with the problem of job obsolescence and would assume the responsibility of developing measures to identify potential areas where job obsolescence is imminent, and ways in which educational programs could be devised to lessen their impact.

The service rendered to the future college-age population in the District would be immeasurable. Such a committee would help to ensure that the occupational education ultimately developed is forward-looking--prepared to anticipate new educational programs and take measures for their implementation.

ADULT EDUCATION PROGRAMS

Adult education programs typically provide the broadest range of courses found in junior colleges. Adult education is one of the most important community service programs the junior college can provide. Educational interests and objectives of persons who primarily participate in the evening program are diverse and difficult to measure, however. Typically, adult education programs are developed over a period of time in response to specific requests and the level of interest exhibited in particular programs.

Current enrollment in adult education programs within the District is substantial. Courses range from welding and woodworking to data-processing, computer programming and electronics. There is evidence to suggest that, although interest in adult education is high in the community, it is not as high as it might be were additional facilities available.

The most significant aspect of adult education is embodied in the concept of continuing education. This reflects the trend toward more intensive programs designed to provide mid-career training and retraining programs. As the process of obsolescence of skills and knowledge in particular fields becomes more pronounced, continuing education programs will have to meet an increasing demand.

COMMUNITY SERVICE PROGRAMS AND FACILITIES

One of the objectives of Harper College is "to encourage the use of its facilities and services for educational and cultural purposes to all citizens of the community." Several major blocks of space to house community-oriented activities have been recommended and are included in the educational specifications presented in Chapter VIII of the full report.

A Data Processing Center has been recommended, not only to accommodate college business and college educational programs, but also to provide a resource for use by business and industry in the College District. The expense of maintaining a computer is prohibitive to many small- and medium-sized firms. Yet data processing requirements and the expanding use of computer technology in ordinary business affairs require access to data processing facilities by many different types of business concerns. In addition, the Data Processing Center could provide an important range of services to local municipal and township governments in automating records and analyzing data for planning and programming purposes.

It is anticipated that the Learning Resources Center will receive high community utilization. The Center will house library and reference aids for a variety of community uses, as well as audio-visual materials to assist community organizations in making special program presentations or to aid in the regular conduct of their organizational functions.

The rapid population growth in the College District, both past and future, suggests that most of the District's residents will be newcomers. Because communities in the District are growing so fast, a sense of community ties is apt to be lacking. The transformation of large clusters of homes into true communities will take time. Meanwhile, feelings of rootlessness because of the lack of social structure may plague the youth in these communities.

In 1960, none of the five municipalities in the College District listed more than 40% of the population as living in the same house for five years. Our previous analysis of population trends indicates that newcomers composed most of the population of Elk Grove Village, Rolling Meadows, Wheeling, and Hoffman Estates. These communities were unincorporated or had only a very small population in 1950. By 1960, they showed major gains.

Community ties may not be particularly strong or well developed in such communities. The new residents of the older, more diversified communities of Arlington Heights, Mount Prospect, and Palatine have the advantage of grafting onto relatively mature communities with a more complete and diversified set of social institutions. Moreover, much of the mobility in these older communities may result from the existing population's normal tendency to change their housing as their family expands or becomes more affluent.

In communities that have emerged only recently, people are often strangers to each other on arrival, and an entire network of social relationships has to be developed. This network, in a fully developed form, will constitute what is generally known as "a community." Herbert Gans, the noted urban planner and sociologist, has observed that:

> The towns (and suburban areas) have uniformly attracted young families in the middle-income range, comparatively homogeneous in such "objective" characteristics as age of adults, and children, family size, education, income and range of occupations represented. This makes deviants out of childless couples and middle-aged people, and creates social and administrative problems of varying intensities and uniqueness, especially in education...
>
> Within this homogeneity the residents are culturally as heterogeneous as in the city proper. Many of them are vertically or horizontally mobile. Some are newlyweds, setting up their first home. Others have just arrived in the metropolitan area from smaller towns. Some come from ethnic or working class neighborhoods of the nearby cities. Quite a few are young businessmen or professionals with upper-class aspirations who come in a mood of transcience to train themselves for future ascent; they know they will eventually own a bigger home.[3]

Harper College can become the focal point of human-centered activities by offering a wide range of facilities to a broad spectrum of people. Because of the lack of other institutions that could fill this need, it seems reasonable that the College should do so.

A Community Theatre and Auditorium is recommended and is designed for a high level of community use. The auditorium's size determined on the basis of anticipated community requirements as opposed to strictly college requirements. Similarly, dining facilities in the Student Center has been planned to accommodate luncheon and dinner programs of business and community organizations.

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3. Herbert J. Gans, "Opprotunities in New Town Research," paper presented at the 1954 meeting of the American Sociological Society, Urbana, Indiana, September 8, 1954.

One of the problems in newly created suburban areas such as are located within the College District is the sense of aimlessness and isolation which the young often feel. A British study of a similar situation in the New Town of Stevenage concluded that:

> In a new community, which must bear the shock of continuing large-scale immigration during a period when its own physical environment is still in the process of formation. This situation (of inadequate facilities for youth) holds grave dangers. These might express themselves in the loss and wastage of much that is best in youth; and in the degradation of what is worst.[4]

It is suggested that a program be developed for a college club open to all young people irrespective of whether they are formally enrolled. In view of some of the sociological problems encountered in rapidly developing suburban areas, the facilities of the College could be made available to provide a richer range of social, cultural and recreational opportunities than would be readily available elsewhere. The type of development which is occurring in the community has not provided a focal point for community activities, and Harper College has an opportunity to fulfill this need.

A college club would have several advantages. It would provide an important opportunity for college students concentrating in such fields as psychology, social work and youth leadership to participate and gain first-hand experience in working with teenagers. There are numerous examples of these types of organizations on the campuses of many colleges and universities. They are often noted for the excellence of their programs.

Finally, the athletic facility of the college has been programmed primarily on the basis of college use, recognizing, however, that at prescribed times certain facilities would be made available to the public.

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4. E.T. Williams, et. al., The Needs of Youth in Stevenage, Report to the Calouste Gulbenheim Foundation, 1959, p. 29.

V. ORGANIZATION

The organizational and administrative structure of the junior college will be an important factor in the success with which the College meets its educational objectives. The organizational framework must be an integral part of the College's educational philosophy. It is important that the structure be flexible enough to accommodate growth and change, and it certainly must preclude the establishment of rigid lines of authority which can enervate the system. The organization should be a dynamic factor in the process of implementation and should be both a generator and a tool for positive change, within itself and within the general educational philosophy.

The recommended administrative organization for the first phase of the development is shown in Figure 3. For ultimate development, a suggested organizational form is shown in Figure 4. The first phase, which will provide the skeletal structure around which the academic and instructional departments, student services and business affairs will be attached as the need arises, will have significant impact on the physical patterns and relationships of the institution.

There is an important departure in this organizational system from standard systems already in practice. The proposed system has been developed, in consultation with the college administration and the Board of Trustees, as a step toward solving the problem of effectively integrating vocational technical programs with the traditional transfer and general education programs.

It is sometimes stated as a flaw in the junior college system that less than one-third of students entering transfer programs continue their education beyond the first two years. However, it must be noted that the attrition rate in the first two years of four year public colleges is also very high, and in the junior college system many students who do not complete the program have fulfilled their objectives and will have benefited from their experience. Nonetheless, this is an area greatly deserving of further study, and much work can be done in examining the effects of expanding and emphasizing program mobility upon the retention rates.

The necessity of recognizing academic talent in students in the occupational education programs has been given much prominence. However, scant attention is focused on mobility in the direction of terminal job-oriented programs from the transfer programs. This suggested organizational structure is aimed an encouraging more student and faculty coordination and, through guidance and counseling, the relating of the student's interests in his present field to the potential of another area, with the general education program acting as a unifying experience. In the diagram illustrating the suggested approach, Figure 5, the general education program would cut across and form an integral part of the occupational and transfer programs. Guidance and counseling functions would be vertically integrated into all systems to identify appropriate situations and to facilitate the lateral movement of students from one program area to another.

Other important contributions to the integrated development of the educational program are as follows:

1. In the suggested organizational structure for both the first phase of development and ultimate development, all instructional activities are placed under the Dean of Instruction as opposed to the more usual pattern of three deans (the Academic Dean, Dean of Occupational Education, and Dean of Evening and Summer Programs) operating independently with direct access to the office of the President.

2. It is planned that the counseling staff will have more ready access to students than has often been the case in other junior colleges. This desirable arrangement has been taken into account in preparing the educational specifications.

3. The organization is planned to allow for easy lateral movement of students between program areas. This avoids their being restricted and channeled in one direction which may not ultimately prove to be the best course of action for their particular needs.

4. The recommended organization should be a positive move to provide the junior college with a more meaningful response to modern educational needs and job opportunities. As we have already discussed, there is an increasing need for strong interaction among the academic occupational and continuing educational programs in order to impart basic skills and knowledge necessary to students seeking employment with growth opportunities, within the context of the continually changing job market.

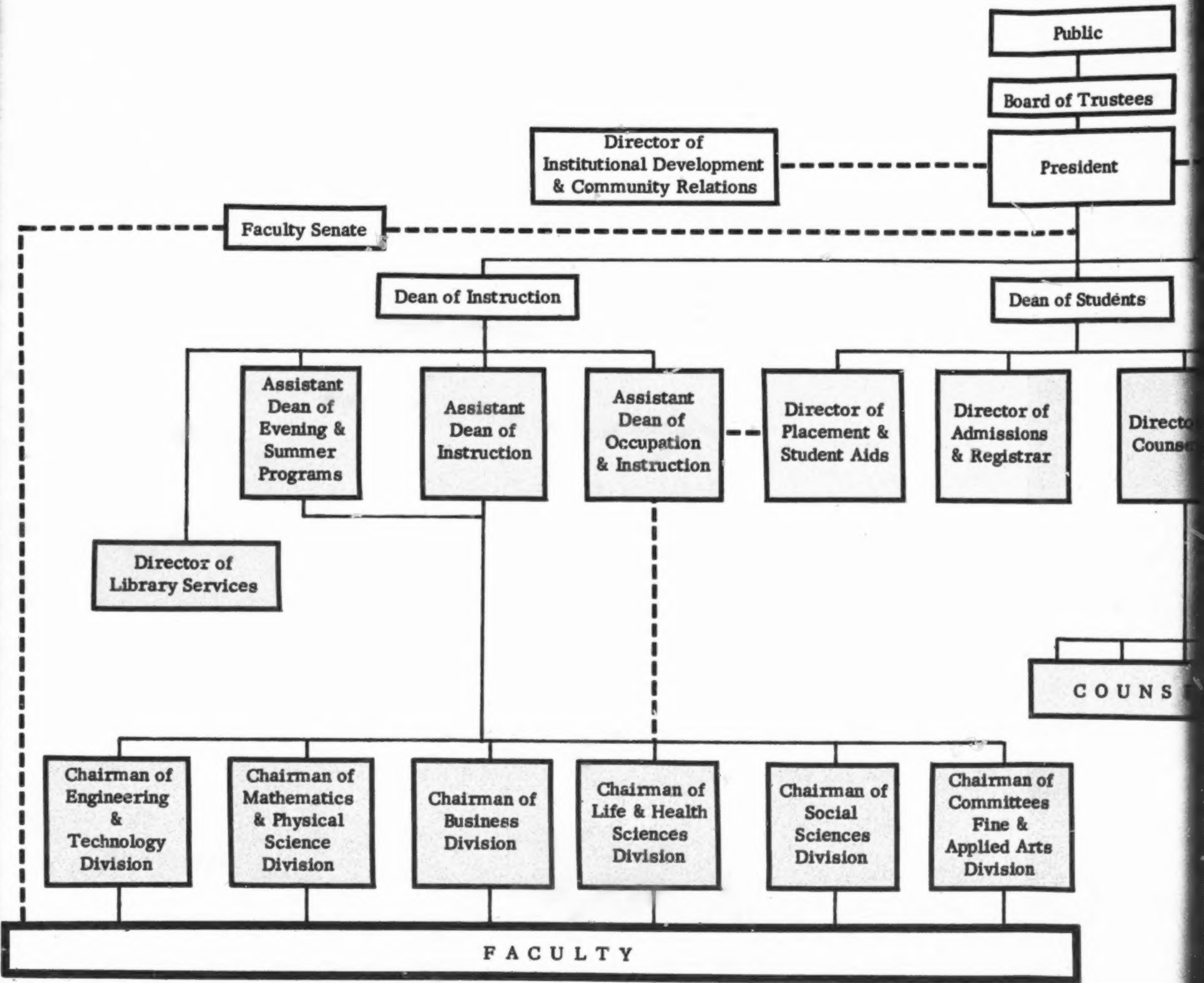

Public
Board of Trustees
President
Director of Institutional Development & Community Relations
Faculty Senate
Dean of Instruction
Dean of Students
Assistant Dean of Evening & Summer Programs
Assistant Dean of Instruction
Assistant Dean of Occupation & Instruction
Director of Placement & Student Aids
Director of Admissions & Registrar
Directo
Couns
Director of Library Services
C O U N S
Chairman of Engineering & Technology Division
Chairman of Mathematics & Physical Science Division
Chairman of Business Division
Chairman of Life & Health Sciences Division
Chairman of Social Sciences Division
Chairman of Committees Fine & Applied Arts Division
F A C U L T Y

FIGURE 3 HARPER COLLEGE ORGANIZATION CHART

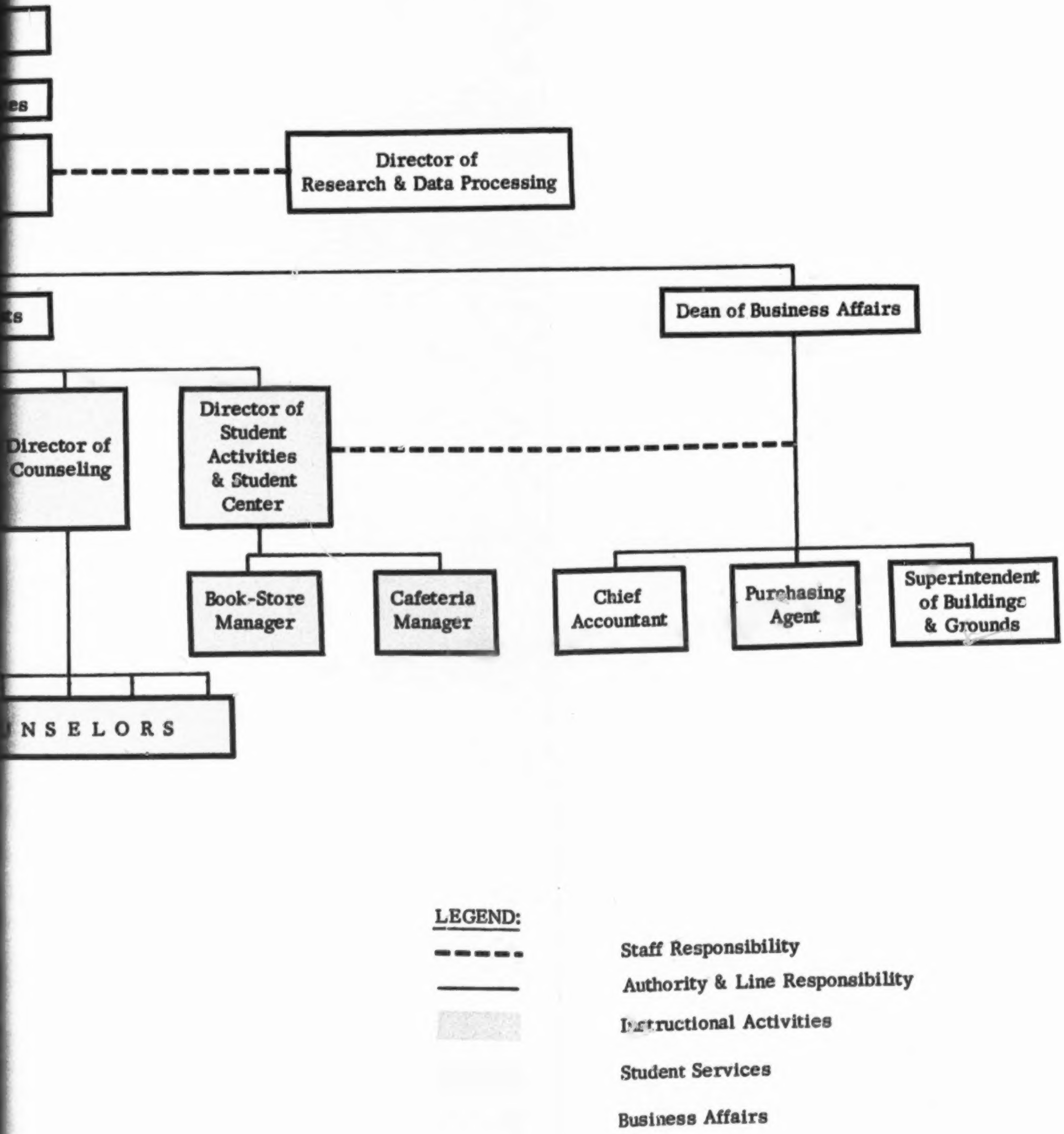

es
Director of Research & Data Processing
ts
Dean of Business Affairs
Director of Counseling
Director of Student Activities & Student Center
Book-Store Manager
Cafeteria Manager
Chief Accountant
Purchasing Agent
Superintendent of Buildings & Grounds
NSELORS
LEGEND:
Staff Responsibility
Authority & Line Responsibility
Instructional Activities
Student Services
Business Affairs

CHART FOR FIRST PHASE OF DEVELOPMENT

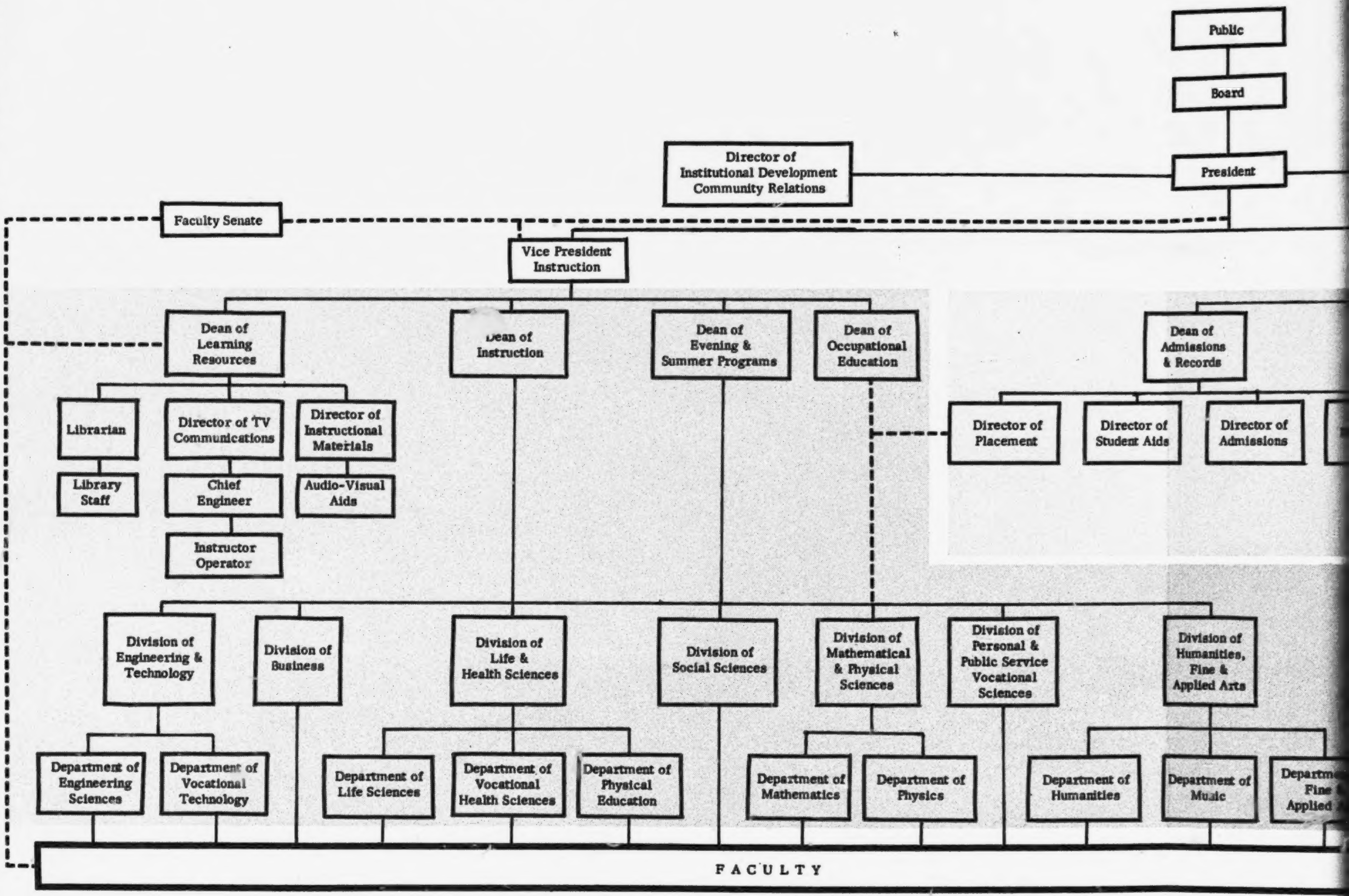
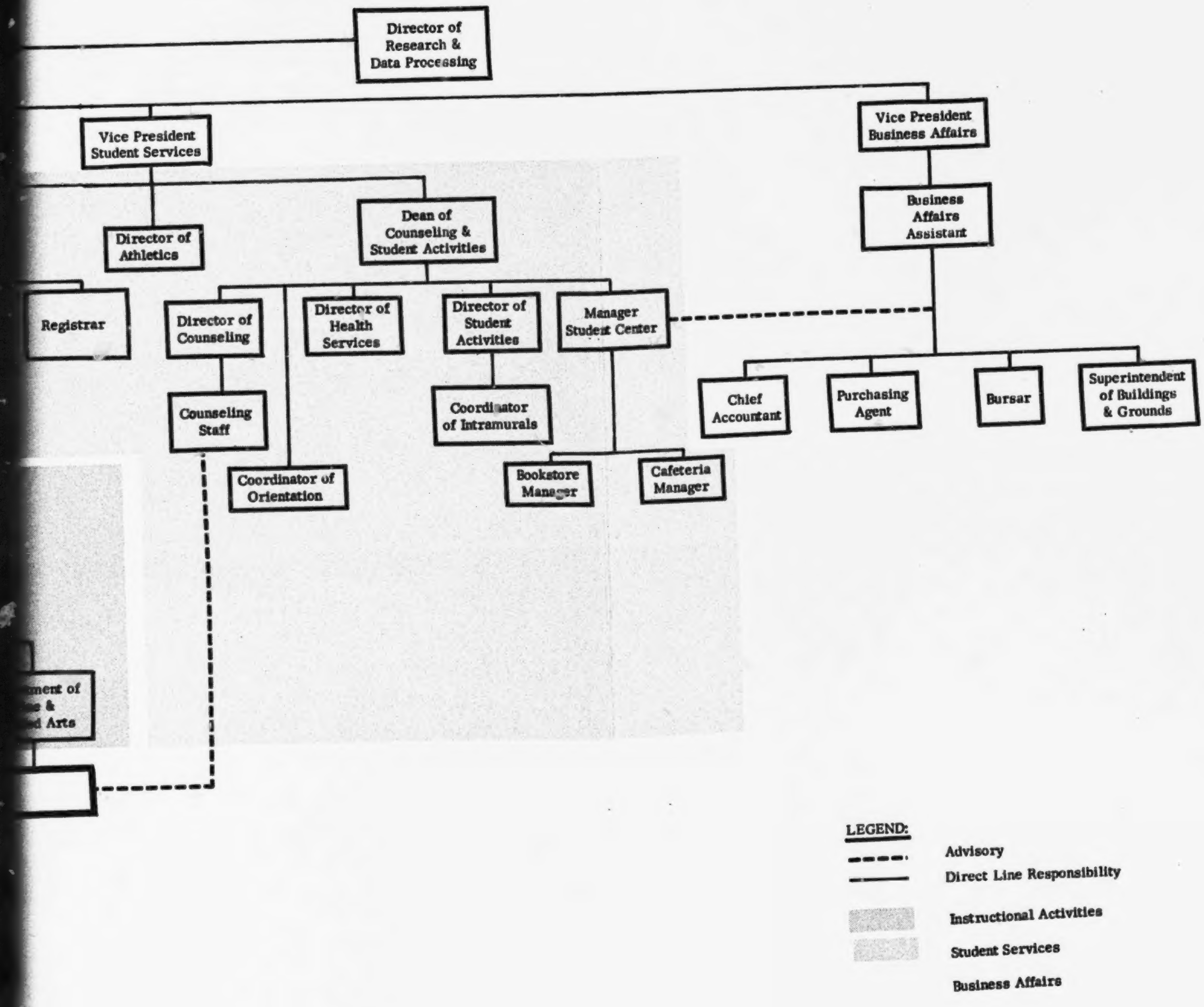
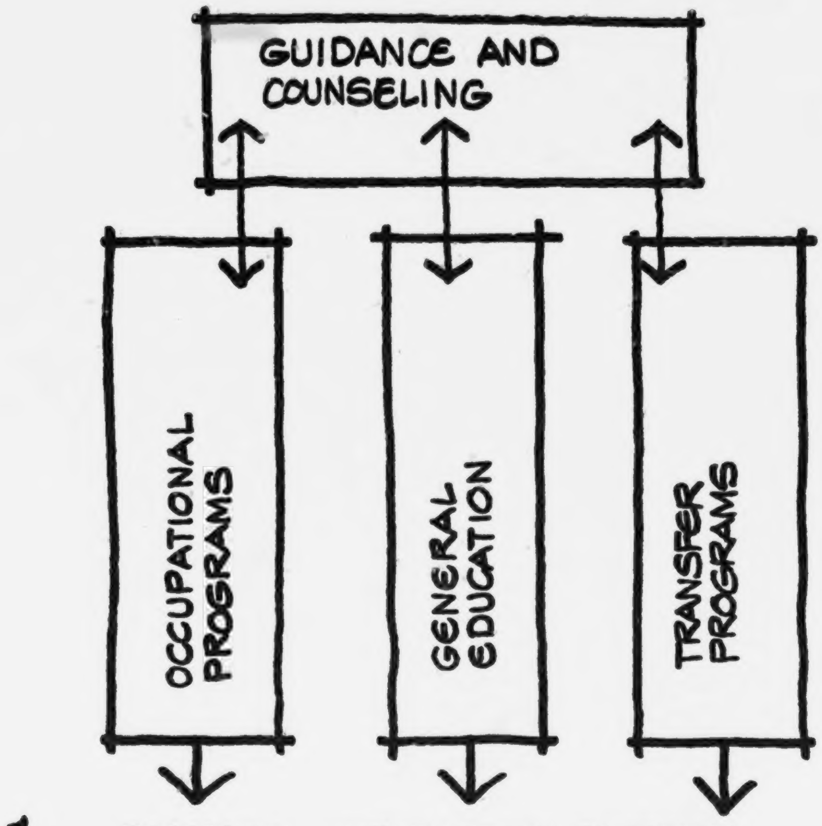

Public
Board
President
Director of Institutional Development Community Relations
Faculty Senate
Vice President Instruction
Dean of Learning Resources
Dean of Instruction
Dean of Evening & Summer Programs
Dean of Occupational Education
Dean of Admissions & Records
Librarian
Director of TV Communications
Director of Instructional Materials
Library Staff
Chief Engineer
Audio-Visual Aids
Instructor Operator
Director of Placement
Director of Student Aids
Director of Admissions
Division of Engineering & Technology
Division of Business
Division of Life & Health Sciences
Division of Social Sciences
Division of Mathematical & Physical Sciences
Division of Personal & Public Service Vocational Sciences
Division of Humanities, Fine & Applied Arts
Department of Engineering Sciences
Department of Vocational Technology
Department of Life Sciences
Department of Vocational Health Sciences
Department of Physical Education
Department of Mathematics
Department of Physics
Department of Humanities
Department of Music
FACULTY

FIGURE 4 HARPER COLLEGE: SUGGESTED OR

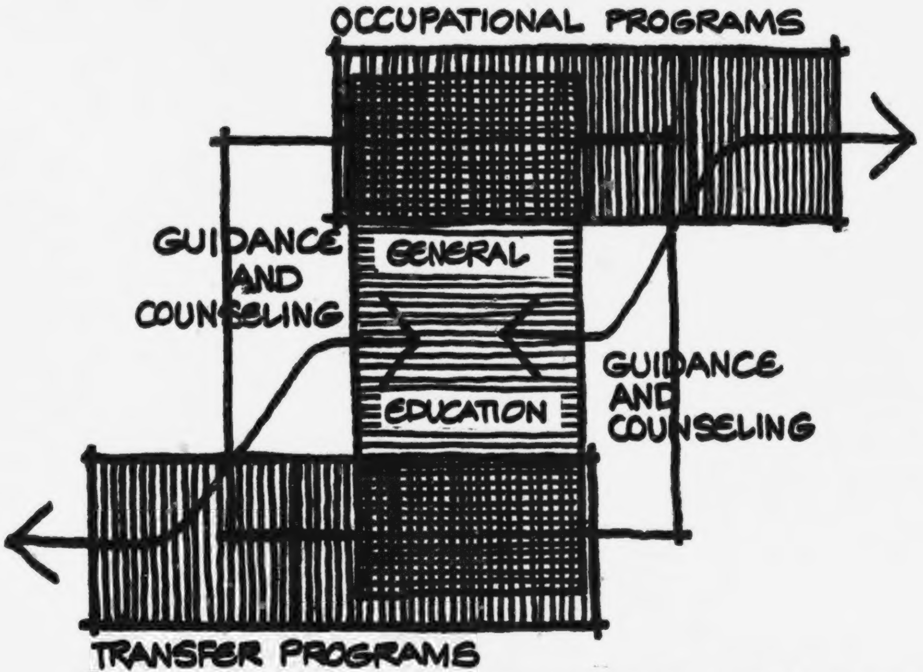
8


Director of Research & Data Processing
Vice President Student Services
Vice President Business Affairs
Director of Athletics
Dean of Counseling & Student Activities
Business Affairs Assistant
Registrar
Director of Counseling
Director of Health Services
Director of Student Activities
Manager Student Center
Counseling Staff
Coordinator of Intramurals
Coordinator of Orientation
Bookstore Manager
Cafeteria Manager
Chief Accountant
Purchasing Agent
Bursar
Superintendent of Buildings & Grounds
ment of
e &
d Arts
LEGEND:
Advisory
Direct Line Responsibility
Instructional Activities
Student Services
Business Affairs

ORGANIZATION FOR ULTIMATE DEVELOPMENT


GUIDANCE AND COUNSELING
OCCUPATIONAL PROGRAMS
GENERAL EDUCATION
TRANSFER PROGRAMS

1. COMMON INTERACTION PATTERN


OCCUPATIONAL PROGRAMS
GUIDANCE AND COUNSELING
GENERAL
EDUCATION
GUIDANCE AND COUNSELING
TRANSFER PROGRAMS

2. SUGGESTED INTERACTION PATTERN

FIGURE 5 PROGRAM INTERACTION IN JUNIOR COLLEGES

Finally, as presented and discussed with the College officials, the organizational system is consistent with the Board of Trustees' general philosophy and will aid in the implementation of this philosophy. Counseling and guidance activities will be given vigorous support and broader options will be provided for individualized programming -- one of the significant student personnel services that has been difficult to achieve with more rigid lines of staff responsibility and authority.

VI. PLANNING THE COLLEGE FACILITIES: EDUCATIONAL SPECIFICATIONS

The physical plant is designed according to educational specifications derived from enrollment projections and expected educational and community service programs. The educational specifications presented in detail in our full report provided the basis for design of the Harper College facilities by the nationally known architectural and planning firm of Candill Rowlett and Scott. A model of their design appears on the cover of this report.

One of the most difficult tasks in the preparation of educational specifications for new institutions is the determination of an appropriate curriculum and its relation to enrollment. In the absence of complete curriculum plans and historical data on the actual student demand for different courses expressed in terms of weekly hours, the typical approach is to assume the enrollment distribution among major curricular divisions and relate this to generalized standards of space sizes and types. This approach does not permit the generation of detailed educational specifications and the margins of error are high

To avoid these problems, we compiled curriculum distribution patterns for over 70 existing junior colleges for which facility utilization data was available on a comparable basis. The distribution patterns are presented on the basis of weekly student hours and represent the actual choice among courses which had been made by over 150,000 full-time students - a much larger sample than would be required for statistical analysis.

With this data base, we developed a computer program which would permit a thorough analysis of curriculum distribution patterns and would serve as a model for the evaluation of the physical requirements for an educational program. By careful selection of curriculum patterns for junior colleges located in districts with characteristics similar to those found in the Harper College District, it was possible to simulate a course demand that would be an appropriate guide for determining educational specifications for the College.

The model, diagrammed in Figure 6, was designed for maximum flexibility in changing any of the parameters that affect the demand for physical facilities and their costs, such as enrollment levels, curriculum patterns, utilization assumptions, space standards and room types--all adjusted for regional variations. With a library of curriculum patterns, it was possible to more accurately project the detailed demand for space by subject matter and room type.

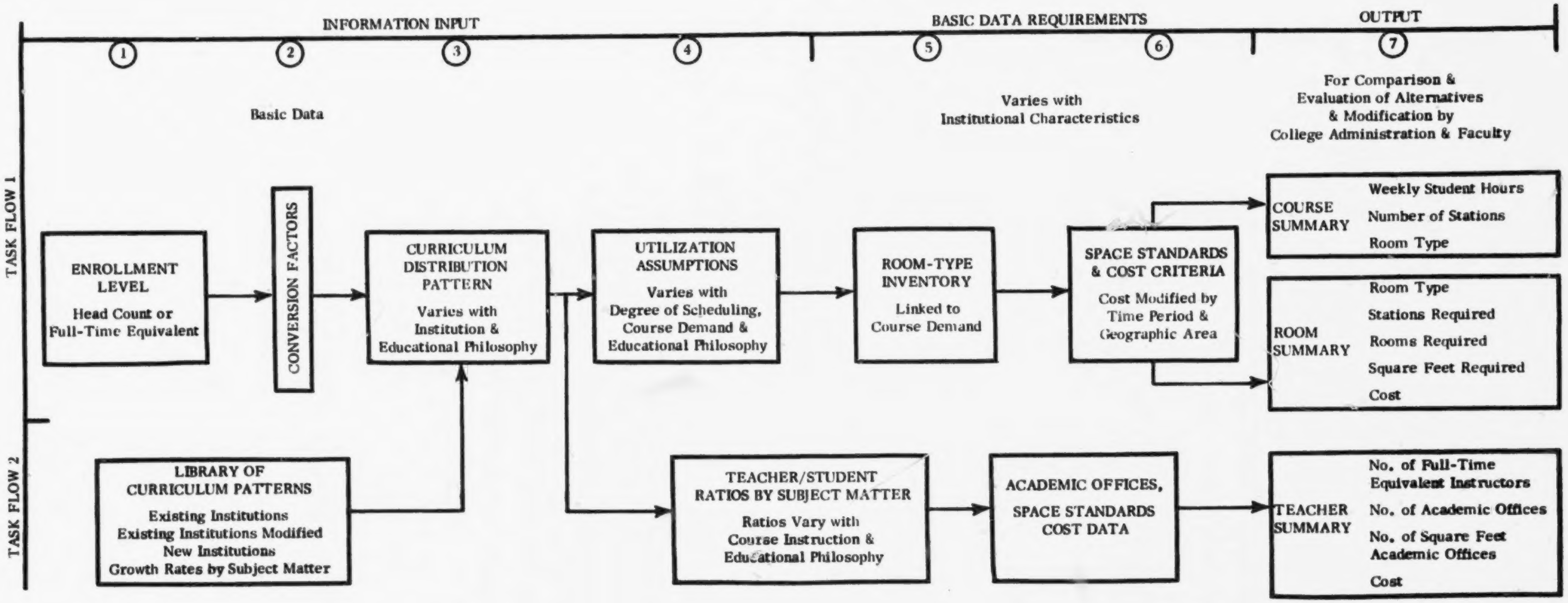

INFORMATION INPUT
BASIC DATA REQUIREMENTS
OUTPUT
①
②
③
④
⑤
⑥
⑦
Basic Data
Varies with
Institutional Characteristics
For Comparison &
Evaluation of Alternatives
& Modification by
College Administration & Faculty
TASK FLOW 1
TASK FLOW 2
ENROLLMENT LEVEL
Head Count or Full-Time Equivalent
CONVERSION FACTORS
CURRICULUM DISTRIBUTION PATTERN
Varies with Institution & Educational Philosophy
UTILIZATION ASSUMPTIONS
Varies with Degree of Scheduling, Course Demand & Educational Philosophy
ROOM-TYPE INVENTORY
Linked to Course Demand
SPACE STANDARDS & COST CRITERIA
Cost Modified by Time Period & Geographic Area
COURSE SUMMARY
Weekly Student Hours
Number of Stations
Room Type
ROOM SUMMARY
Room Type
Stations Required
Rooms Required
Square Feet Required
Cost
LIBRARY OF CURRICULUM PATTERNS
Existing Institutions
Existing Institutions Modified
New Institutions
Growth Rates by Subject Matter
TEACHER/STUDENT RATIOS BY SUBJECT MATTER
Ratios Vary with Course Instruction & Educational Philosophy
ACADEMIC OFFICES, SPACE STANDARDS COST DATA
TEACHER SUMMARY
No. of Full-Time Equivalent Instructors
No. of Academic Offices
No. of Square Feet Academic Offices
Cost

FIGURE 6 A GENERALIZED DESIGN MODEL FOR PRODUCING AND EVALUATING THE PHYSICAL FACILITY AND FINANCIAL CONSEQUENCES OF AN EDUCATION PROGRAM

After development of the model and several test applications, the basic educational program, as defined previously was prepared in a way that would be consistent in form with the basic library of curriculum patterns stored on the computer program. The basic educational program is shown in Table 10. The major divisions and courses represent standard curricula at junior colleges with enrollment levels and in districts with socio-economic characteristics analogous to the Harper District. The program was modified after consultation with the College administration, and it includes the range of courses necessary for development of meaningful transfer programs and occupational education curricula which will be responsive to community needs discussed in previous chapters.

Utilizing the basic educational program and design enrollment levels of 2800, 5000 and 7000 FTE students, the model produced a simulated weekly student hour and student station demand which formed the basic rationale for development of the educational specifications. In addition, the scope of the simulation provides the framework for accommodating the actual educational curriculum which is ultimately developed by the professional staff and faculty of the College.

A basic comprehensive inventory of room types used by junior colleges has also been employed in this study. In the basic inventory, each room type has a different set of station requirements which have been modified and expanded by the educational philosophies and teaching space concepts.

Associated with each room type are space standards--assignable square feet per station. As the model is used over time, a growing library of space standards will represent an increasing level of experience and permit greater reliance on the model as a predictive tool.

The computation of the number of full-time equivalent teachers required by each department or course-type category was calculated from statistical data from the statewide California utilization study. For each of the department and course types the actual number of weekly student hours per FTE teaching staff as used by the different courses was calculated. The number of FTE teaching staff per course varies with each course type, and the determination of the variables is based upon a different mix of lab courses vs lecture courses and also the number of teachers or teaching assistance required for a particular course. The actual total student contact hours demanded by each course was divided by the ratio of weekly student hours per FTE teaching staff to derive the number of teachers required by the course. The number of teachers that resulted was then compared to specific institutions similar to Harper College in the determination of the requirement for academic office space.

The standards for academic office space were finally fixed in consultation with the College administration.

The final output from the computer is shown in the set of printouts contained in Appendix E of the full report. These printouts are for assumed enrollment levels of 2800, 5000 and 7000 full-time equivalent students and show the different distribution patterns at each level.

Following the course summary, the computed data was translated into a room summary. The room summary forms the basis for the actual specifications. Rooms are aggregated by type and level of demand, and compatible or complimentary spaces are then arranged into specific building blocks to maximize functional interrelationships. A summary of space allocations is presented in Table 14.

In the course of the physical planning and design of the institution, the architects will find it necessary and appropriate to make adjustment in the space program. Adjustments will also be subject to change. The process of review and modification is continuous. In some cases, revisions will be made on the basis of financial considerations; in other instances, on changes in program emphasis. As development unfolds, increasing numbers of persons with knowledge of diverse specialized facilities will be involved in the process. Some will be technical consultants and others will be staff and faculty who will occupy particular facilities. Their experience and opinions are important.

After establishing the scope of required facilities, the educational specifications form an important benchmark against which suggested changes can be measured. In this respect they are a valuable tool in the administrative and planning process.

TABLE 14

SUMMARY OF SPACE REQUIREMENTS

	FTE Enrollment Levels		
Teaching Areas	2,800 Net Sq Ft	5,000 Net Sq Ft	7,000 Net Sq Ft
1. Academic Center	32,570	50,090	64,870
2. Academic Audio-Visual Lecture and Demonstration Center	6,950	10,000	11,575
3. Fine and Applied Arts	7,995	11,085	14,550
4. Music Department	5,955	8,225	9,945
5. Science Center	26,080	39,310	50,410
6. Engineering and Technology	12,520	23,820	25,210
7. Science and Technology Audio-Visual Lecture and Demonstration Center	4,200	6,075	6,975
8. Vocational Technological	---	15,900	28,500
9. Public and Personal Vocational Services	1,720	4,190	4,820
Subtotal	97,990	168,695	216,855
Nonteaching Areas			
1. Learning Resources Center	26,758	41,608	53,250
2. Student Center	38,365	58,680	64,905
3. Administration Center	10,154	11,434	11,474
4. Athletic Facilities	52,640	64,195	68,905
5. Data Processing Center	4,512	4,512	4,512
6. Community Theatre & Auditorium	47,580	47,580	52,750
7. Warehouse, Garage & Maint.	11,150	14,350	16,350
Subtotal	191,159	242,359	272,146
Total	289,149	410,844	489,000
Outdoor Spaces			
1. Parking	709,000	1,276,400	1,796,900
2. Other	---	6,000	12,500
	709,000	1,282,400	1,809,400

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